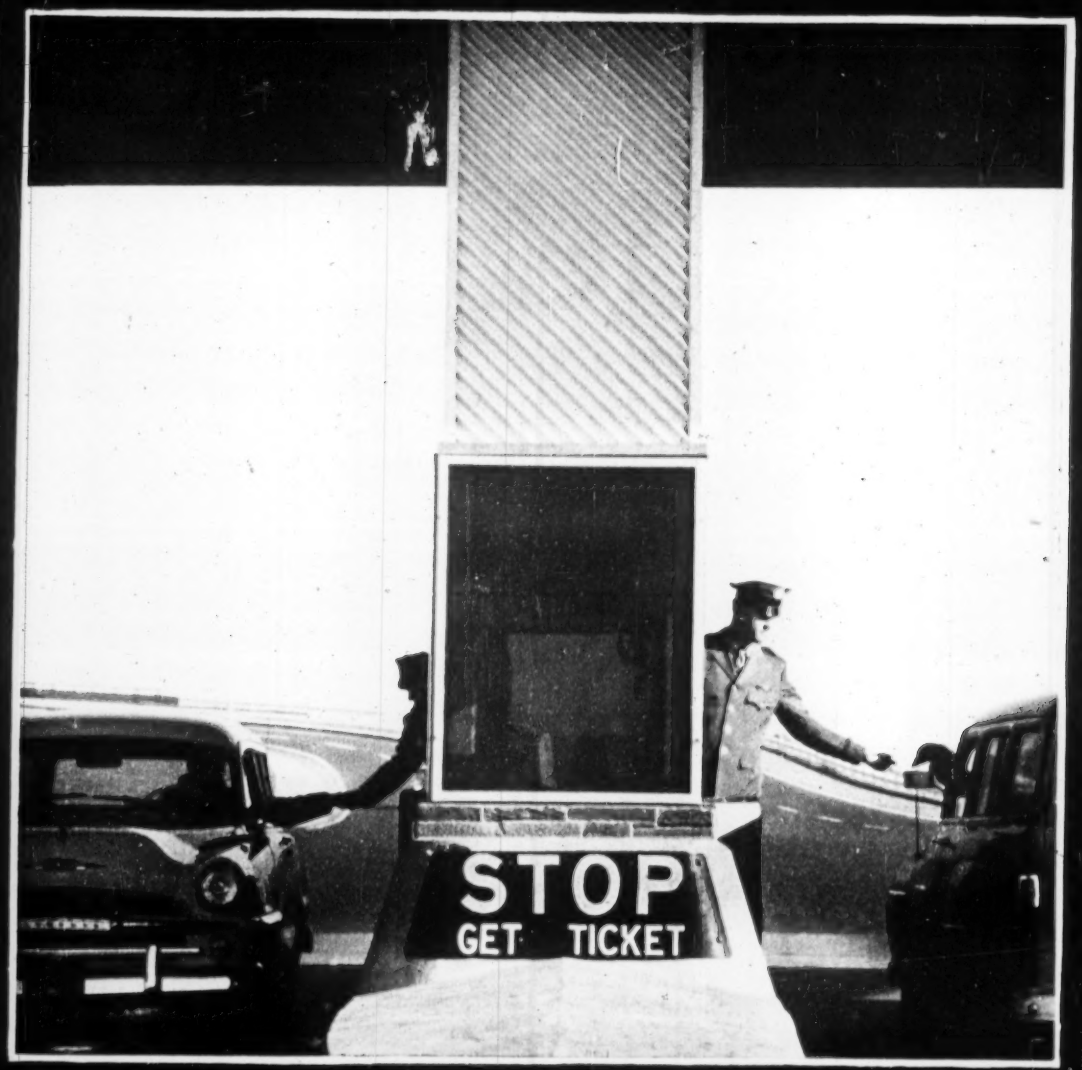
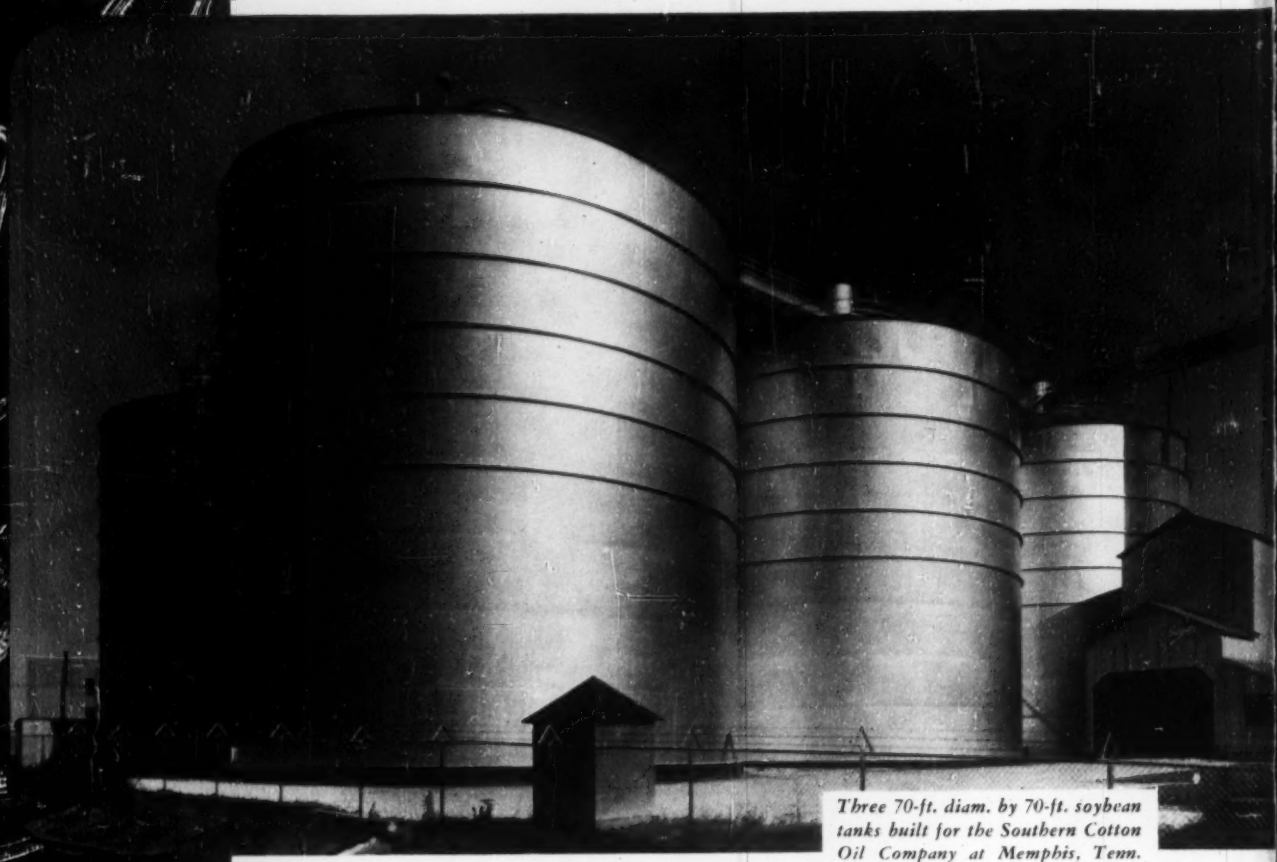
ENGINEERING NEWS-RECORD



E B POWER
UNIVERSITY MICROFILMS IN
313 N 1 ST
ANN ARBOR MICH

Tanks for Soybean Storage



Three 70-ft. diam. by 70-ft. soybean tanks built for the Southern Cotton Oil Company at Memphis, Tenn.

The three Horton® tanks in the above view are 70-ft. diam. by 70-ft. high. They were built for the Southern Cotton Oil Company at Memphis, Tennessee, and are used to store soybeans.

The name Horton is a familiar one in the industrial world to users of welded steel plate structures. Such tanks, built by Chicago Bridge & Iron Company, are used for the storage of raw materials and finished products.

We are equipped to design, fabricate and erect steel plate structures to solve any storage problem. Our shops have facilities to pickle and paint fabricated steel plates by the Horton pickling and painting process.

CB&I Field Welding Supervisory Service

During construction of a welded steel plate structure, Chicago Bridge & Iron Company Field Welding Supervisory Service provides a welding expert to assist the Foreman in charge. He helps the Foreman train and qualify welders, check welding equipment and supervise the cutting and grading of test plugs. This service is provided on *every* Horton welded steel structure we build at *no extra cost to you!*

Whatever your storage problems, write our nearest office. We will be happy to provide information, estimates or quotations.

CHICAGO BRIDGE & IRON COMPANY

Atlanta, 3 ..... 2123 Healey Building
Birmingham, 1 ..... 1520 North 50th Street
Boston, 1 ..... 1012—201 Devonshire Street
Chicago, 4 ..... 2101 McCormick Building
Cleveland, 15 ..... 2201 Midland Building
Detroit, 26 ..... 1506 Lafayette Building
Houston, 2 ..... 2109 C & I Life Building
Los Angeles, 17 ..... 1511 General Petroleum Building
New York, 6 ..... 3311—165 Broadway Building
Philadelphia, 3 ..... 1624—1700 Walnut Street, Building
Pittsburgh, 19 ..... 3212 Alcoa Building
Salt Lake City, 4 ..... 512 West 17th South Street
San Francisco, 4 ..... 1530—2000 Bush Street
Seattle, 1 ..... 1312 Henry Building
Tulsa, 3 ..... 1617 Hunt Building

Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY and GREENVILLE, PA. In Canada: HORTON STEEL WORKS LIMITED, FORT ERIE, ONT.

WHAT FULL CONTROL MEANS

to the operator of an Allis-Chalmers TR-200 Motor Wagon

Fast, Efficient Loading — hydraulic steering control gets the TR-200 under the shovel fast without tiring wheel fight. Large top area permits fast loading with less spillage . . . double steel floor is reinforced with heavy oak plank to absorb loading shocks. Steering jacks and tires are fully protected from falling rock. The TR-200 carries 15 cu. yd. heaped or 18-ton loads.

Quick, Clean Dumping — operator controls two hydraulic jacks to dump and return bowl. Because this unit's wheelbase remains stationary, all four brakes can be set for maximum safety in bank-edge dumping. Rear end dumps far enough over embankment to eliminate rehandling material. Tapered bowl design and 70-degree tilt give quick, complete load ejection. Body may be heated to prevent load freezing.

Safe, High-Production Hauling — no worry when highballing a full load because four-wheel air brakes stop the TR-200 quickly even if the engine should stall. Steering pistons are equipped with stops to eliminate jackknifing. High horsepower-to-yardage ratio and large, rock-lug tires speed your operations . . . even on steep grades and in heavy going. The TR-200 travels at speeds up to 21.6 mph., delivers more loads, reduces idle shovel time.

Plus Added Versatility — The same 176-hp. diesel tractor unit and hydraulic controls may be used to operate an interchangeable self-loading scraper body for large scale stripping and hauling jobs.

GET THE FULL STORY FROM YOUR ALLIS-CHALMERS DEALER

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, WIS.

96 Pages

Copyright 1954

1954 EDITION

Now available in limited quantity . . . 50¢

DIRECTIONS FOR MAKING ASTRONOMICAL OBSERVATIONS AND COMPUTING RESULTS. Azimuth by Direct Solar Observation and time from same observation. Meridian by Solar Attachment. Meridian by Polaris at Elongation. Azimuth by Polaris at any Hour Angle. Latitude by Sun at Noon. Latitude by Polaris. All requisite tables (except 5 place trigonometric).

NO. 6¼ R
BUZKA TRANSIT

- Accurate graduations on Sterling Silver
- Permanent line of collimation
- Precise optics
- Consistent performance under all climatic conditions

IF YOU'VE NEVER OWNED A BERGER, you owe it to yourself to learn how accurate it really is . . . how little repair it requires . . . the lifetime of trouble-free service you can count on . . . how inexpensive a Berger Instrument is in the long run.

THE BEST IN SIGHT IS

BERGER

Engineering and Surveying Instruments . . . Since 1871

C. L. BERGER & SONS, INC. 1754
37 Williams St., Roxbury, Boston 19, Mass.

Send me the 1954 Edition SOLAR EPHEMERIS

Name .....
Title .....
Company .....
Address .....
City..... Zone.... State.....

ENGINEERING NEWS-RECORD

ABP Member

Editorial offices: 330 W. 42nd St., New York 36, Tel. LOngacre 4-3000

Number of copies of this issue printed: 61,289

Contents on page 17

Waldo G. Bowman

Editor

E. E. Halmos Jr. ..... *Managing Editor*
V. T. Boughton ..... *Transportation, Power*
F. S. Merritt ..... *Architectural, Structural*
R. H. Dodds ..... *Contracting, Heavy Construction*
S. C. Jensen ..... *Materials and Equipment*
A. J. Fox Jr. ..... *Hydraulics, Water Supply, Sanitation*
J. J. Christie ..... *National Affairs*
G. T. Orick ..... *Labor, Men and Jobs*
J. P. Chamberlain ..... *Business and Finance*
R W O'Neill ..... *International, Features*
J. R. Owen ..... *Municipal*
J. R. Carr ..... *Midwest (Chicago)*
L. L. Wise ..... *West (San Francisco)*
N. A. Bowers ..... *Consultant (San Francisco)*
Elsie Eaves ..... *Business News Department*
J. H. Webber ..... *Economics*
J. A. Mahoney, M. O. Wetzel ..... *Construction Reports*
M. W. Roessler, E. R. Huber, Dori Weiss ..... *Statistics, Costs, Prices*
H. G. Compton ..... *Photography*
T. D. MacGregor, B. J. Lamb, M. V. Leggiero ..... *Copy, Rewrite, Layout*
L. T. Tarpey, J. C. Greenough ..... *Printing*

Washington News Bureau, Room 1189 National Press Building: G. B. Bryant, Jr., *Manager,* Glen Bayless, A. E. Adams, Jay Flocken, Boyd France, Sam Justice, W. H. Kearns, J. L. Kent, Craig Lewis, D. O. Loomis, Jesse Mock, Gladys Montgomery, A. L. Moore, M. A. Reichek, Caroline Robertson, V. B. Smith, W. B. Whichard, Jr.

Domestic News Bureaus: Atlanta, 1321 Rhodes-Haverty Bldg., E. D. White; **Cleveland,** 1510 Hanna Bldg., R. A. Cochran; **Detroit,** 856 Penobscot Bldg., J. C. Jones Jr.; **Houston,** 1303 Prudential Bldg., J. A. Lee; **San Francisco,** 68 Post Street, M. C. Ralston; **Los Angeles,** 1111 Wilshire Blvd., John Shinn; **Seattle,** 6040 Fifth Ave., N.E., Ray Bloomberg.

Correspondents: Albany, Albuquerque, Augusta, Me., Austin, Boston, Boulder, Baltimore, Birmingham, Bismarck, Charleston (W. Va.), Charleston (S. C.), Columbus, Cincinnati, Cleveland, Chicago, Cheyenne, Dallas, Denver, Detroit, Durham, Harrisburg, Helena, Houston, Hartford, Indianapolis, Jackson, Miss., Jacksonville, Jefferson City, Kansas City (Mo.), Lansing, Lincoln, Little Rock, Miami, Memphis, Minneapolis, Montgomery, Milwaukee, New Orleans, Norfolk, Omaha, Oklahoma City, Philadelphia, Pittsburgh, Portland (Ore.), Providence, Phoenix, Pierre, St. Louis, Schenectady, Syracuse, St. Paul, Seattle, Salt Lake City, Spokane, Topeka, Trenton, Wilmington. **Canada:** Montreal, Toronto, Ottawa, Victoria, Regina.

Foreign News Bureaus: J. K. Van Denburg, Jr., **New York;** G. W. Schroder, **Frankfurt;** Nathaniel McKitterick, **London;** Herbert Leopold, **Manila;** John Wilhelm, **Mexico City;** Ross Hazeltine, **Paris;** A. W. Jessup, **Tokyo;** L. I. Holmes, **Sao Paulo. Correspondents:** Amsterdam, Athens, Bangkok, Bogoto, Bombay, Brussels, Buenos Aires, Caracas, Copenhagen, Geneva, Havana, Helsinki, Johannesburg, Lima, Madrid, Melbourne, Oslo, Rome, Stockholm, Sydney, Tehran, and 21 other principal cities and countries.

Robert F. Boger

Publisher

January 7, 1954 ENGINEERING NEWS-RECORD Vol. 152, No. 1

Member ABC and ABP

Published weekly by McGraw-Hill Publishing Company, Inc., James H. McGraw (1860-1948), Founder. **Publication Office, 99-129 North Broadway, Albany 1, N. Y.**

Executive, Editorial and Advertising Offices: McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y. Donald C. McGraw, President; Willard Chevalier, Executive Vice-President; Joseph A. Gerardi, Vice-President and Treasurer; John J. Cooke, Secretary; Paul Montgomery, Senior Vice-President, Publications Division; Ralph B. Smith, Vice-President and Editorial Director; Nelson Bond, Vice-President and Director of Advertising; J. E. Blackburn, Jr., Vice-President and Director of Circulation.

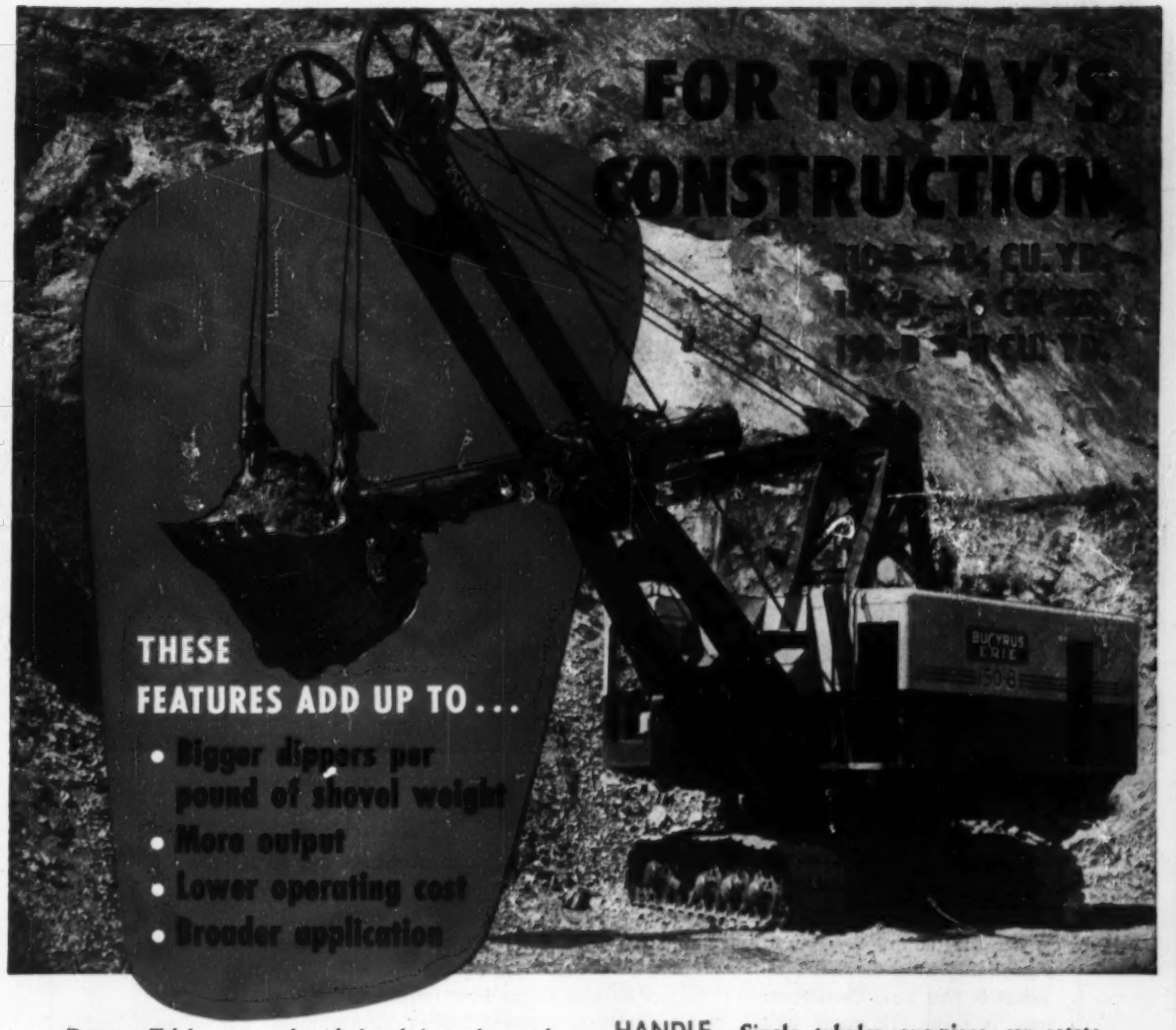
Subscriptions; Address correspondence to Engineering News-Record—Subscription Service, 99-129 North Broadway, Albany 1, N. Y., or 330 W. 42nd St., New York 36, N. Y. Allow one month for change of address.

Subscriptions are solicited only from persons with an identifiable commercial or professional interest in construction and building. Position and company connection must be indicated on subscription orders.

Single copies 35¢. Subscription rates—United States and possessions, $6.00 a year; $9.00 for two years; $12.00 for three years. Canada, $8.00 a year; $12.00 for two years; $16.00 for three years. Other Western Hemisphere countries, $15.00 a year; $25.00 for two years; $30 for three years. All other countries, $20.00 a year; $30.00 for two years; $40.00 for three years. Entered as second class matter October 29, 1936, at the Post Office at Albany, N. Y., under Act of Mar. 3, 1879. Printed in U. S. A.

Copyright 1954 by McGraw-Hill Publishing Co., Inc.—All Rights Reserved.

Tomorrow's Shovels


FOR TODAY'S CONSTRUCTION
THESE FEATURES ADD UP TO...
• Bigger dippers per pound of shovel weight
• More output
• Lower operating cost
• Broader application

Bucyrus-Erie's progressive design brings the modern shovel front end to the construction industry.

Only Bucyrus-Erie offers these features in front end equipment on heavy-duty shovels.

BOOM— Two section — light upper section, rugged lower section. No excess weight. Weight and strength concentrated where needed and close to center of rotation.

Lower boom section part of main machine, through twin strut connections to A-frame. Boom feet wide spread — no sway braces or cables. No boom jacking.

TYPE OF HOIST— Twin dual, single-part ropes, one attached to each side of dipper. Power automatically concentrated where needed on dipper lip to break through bank obstructions. No dipper bail.

SADDLE BLOCK— Cylindrical. Rubber cushioned against impact during fast plugging of swing. No binding with flexed dipper handles.

HANDLE— Single, tubular, one-piece, can rotate in saddle block. No handle twist possible.

CROWD MACHINERY— Located on revolving frame, close to center of rotation. Position reduces swing inertia. Accessible, protected.

TYPE OF CROWD - Quiet, positive, independent twin rope crowd and retract. Adapts itself to tubular handle rotation — low friction — less crowd power required.

CONVERTIBILITY— Shovels fully convertible to draglines of the independent motor type — no operating clutches or brakes.

There are many more reasons why these modern Bucyrus-Eries with Ward Leonard Variable Voltage control are the finest heavy-duty excavators ever built. Get the full story today.

8L53C

BUCYRUS ERIE

South Milwaukee
Wisconsin

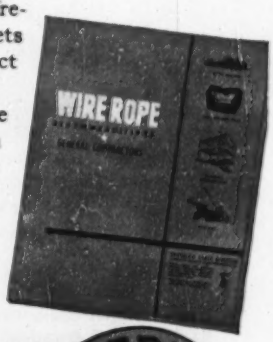
an ACCO product

TRU-LAY Preformed WIRE ROPE

What Drag Rope Do YOU Use?

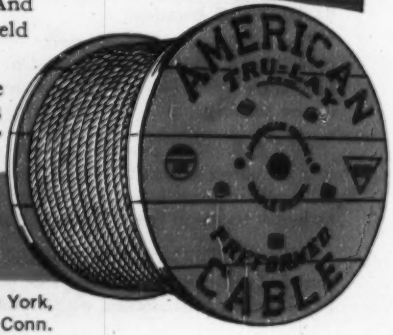
• There are three ropes (boom, hoist, and drag) on dragline machines, but let's just talk about the one which wears out the fastest—the drag rope. It is frequently down in the dirt; it is subject to a terrific amount of abrasion; it gets jerked and snapped—yet, if you use the correct construction, you can expect reasonably long service.

What Is The Best Construction? Bigger outside wires wear longer and if the rope is Lang lay, more length of each wire is exposed adding to abrasion resistance. (Preforming of TRU-LAY makes Lang lay easy to handle.) Now to withstand the shock loads, TRU-LAY Preformed is made with improved plow steel wires (identified by the GREEN strand) and an independent wire rope core. Here's really a tough rope for a tough job.



You don't have to guess which rope is best for each job you have—not if you get a copy of AMERICAN CABLE'S "Wire Rope Recommendations for General Contractors." It tells you exactly what you need. And the recommendations are based on careful recordings of many field studies by TRU-LAY engineers.

See your AMERICAN CABLE distributor today or write our Wilkes-Barre, Pa., office for a free copy of No. **128-B** "Wire Rope Recommendations for General Contractors."



ACCO

TRADE MARK

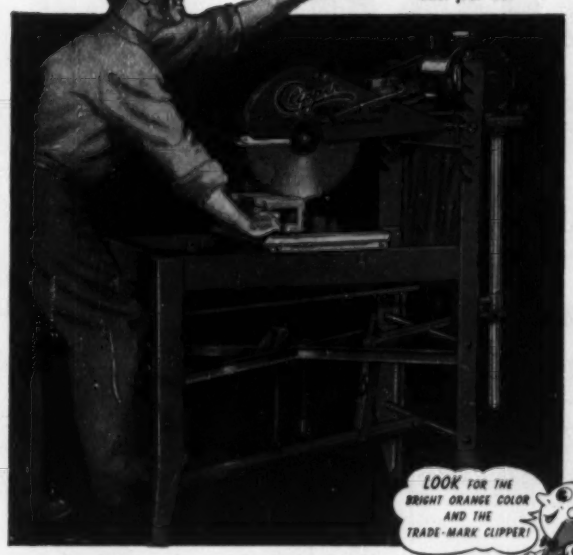
AMERICAN CABLE DIVISION
AMERICAN CHAIN & CABLE

Wilkes-Barre, Pa., Chicago, Denver, Houston, Los Angeles, New York, Odessa, Tex., Philadelphia, Pittsburgh, San Francisco, Bridgeport, Conn.

LOOK JOE!...in SECONDS

A... Clipper MASONRY SAW ... WILL CUT THE HARDEST BRICK–STONE–TILE!*

*and at the lowest cost per cut



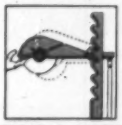
AND A... Clipper "CLEANS RIGHT THRU" MASONRY SAW

. . . will PAY FOR ITSELF from the SAVINGS in TIME and MATERIAL

HERE'S WHY!...The DUSTLESS Clipper operates right beside your bricklayers because the Clipper is PORTABLE . . . easily moved from basement to roof. One Clipper Model HD with a Clipper Diamond Blade will do the cutting of 3 ordinary abrasive saws! This is possible ONLY with such Patented Clipper features as...the Pressure Equalizer Spring, the Famous Select-A-Notch, Water Application System, and Adjust-A-Cut which makes possible One-Spot Operation.

Only with These Patented Clipper Features is Masonry Cutting Economical . . .

PRESSURE EQUALIZER



SELECT-A-NOTCH

WET OR DRY PUMP

IT'S YOURS ON...FREE TRIAL!

ORDER TODAY . . . on FREE TRIAL. Discover for yourself how CLIPPER...will increase your profits by increasing your production at reduced costs. CLIPPER'S "On the Job" FREE TRIAL guarantees you satisfaction at no obligation!

OUR ONLY BUSINESS FOR NEARLY 20 YEARS . . . MASONRY & CONCRETE SAWING!

The unqualified Clipper guarantee of satisfaction is backed by world-wide experience, the ability to select the finest materials, and the "know-how" to put them together.

TODAY!...Try the New—Faster Cutting—Economical CLIPPER SUPERIOR BLADES

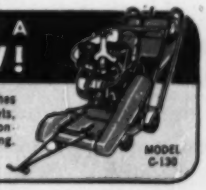
. . . guaranteed to "Consistently Provide the fastest cut...at the lowest cost...with the greatest ease!" Clipper alone can supply *all* specifications of Abrasive, Diamond and "CBR" (Break-Resistant) Blades to accurately meet your requirements. INVEST IN CLIPPER and YOU'LL GET RESULTS!

Clipper

SAW BEFORE BREAKING WITH A CLIPPER CONSAW!

Save up to 50% in labor and material. Saw repair patches —gas, water, sewer and air line trenches in floors, streets, walks, runways and highways. Save, too, by sawing contraction joints—eliminate costly hand forming and spalling.

5 MODELS, GAS OR ELECTRIC POWERED



KANSAS CITY 8, MISSOURI

COAST TO COAST

- PHILADELPHIA
- ST. LOUIS
- CLEVELAND
- DETROIT
- AUSTIN, TEX.
- CHICAGO
- LOS ANGELES
- BOSTON
- HOUSTON
- MILWAUKEE
- ST. PAUL
- INDIANAPOLIS
- NEW YORK
- PITTSBURG
- SAN FRANCISCO
- CINCINNATI
- ATLANTA
- WASHINGTON, D.C.
- BIRMINGHAM
- CHARLOTTE, N.C.
- DALLAS
- KANSAS CITY

MAIL COUPON NOW

IN CANADA – P.O. BOX 476, WINDSOR, ONTARIO

SOLD ONLY DIRECT FROM FACTORY BRANCHES

CLIPPER MANUFACTURING CO.
2812 N. WARWICK • KANSAS CITY 8, MO.

Send FREE Literature and Prices on:

- ☐ CLIPPER MASONRY SAWS
  - ☐ DUSTLESS MODELS
  - ☐ DRY ONLY MODELS
- ☐ CLIPPER CONSAWS
- ☐ CLIPPER ABRASIVE BLADES
  - ☐ WET ☐ DRY
- ☐ CLIPPER DIAMOND BLADES

(97)

COMPANY _____

ADDRESS _____

CITY _____ STATE _____

"Euc" lever-type Scrapers

Pay off in Performance

Getting a heaped load of 21 cu. yds. at Jemez Dam in New Mexico.

- 15.5 cu. yds. struck
- 275 h.p. engine
- 10-speed transmission
- Interchangeable hydraulic jacks
- 4-section reversible and interchangeable cutting blades
- Lever actuated bowl, apron & ejector—only 13 ft. of cable

Lever action, an exclusive Euclid Scraper development, offers many profit-making advantages that you can't get in any other scraper. It is the most important advancement in scraper design and performance in many years!

Just think of it—no cables to break because bowl and apron lift and the positive roll-out ejector are actuated by interchangeable hydraulic jacks. Only 13 feet of long-life cable, part of the apron lift, are used. There's no danger of a broken cable causing damage or delay—ever, and especially on high speed hauls. There's no costly cable replacement and lost time threading cable through dozens of sheaves and pulleys. And most important of all is the top performance and high job availability—the low cost production—you can count on with "Eucs" on your job.

Get the complete story from your Euclid distributor and check all of the features that mean more loads and bigger payloads per hour at lower cost. Just ask for your copy of Form B502.

EUCLID DIVISION GENERAL MOTORS CORPORATION, CLEVELAND 17, OHIO

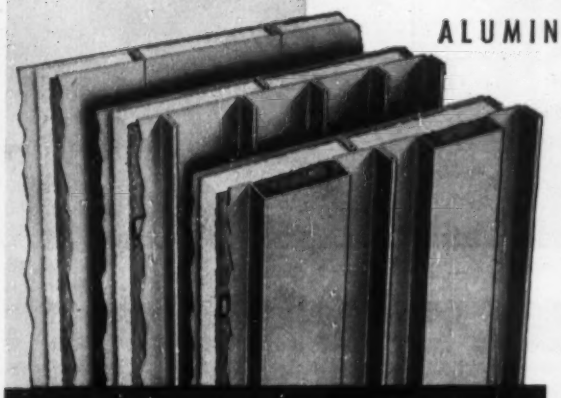
Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

INSULATED METAL WALLS

for INDUSTRIAL and COMMERCIAL BUILDINGS

ALUMINUM, STAINLESS or GALVANIZED STEEL



FLUSH, RIBBED, or FLUTED

Over-all "U" Factor of Various Types is Equivalent to or Better than Conventional 16" Masonry Wall

Here is another completely new industrial plant constructed with Insulated Metal Walls . . . both plant and powerhouse have aluminum exteriors. From north to south, and across the country, the trend in industrial and commercial building is to this modern, light weight construction. Apart from design effects obtainable, and the over-all appearance of such structures, both architects and owners are quick to recognize the important economies in lower material cost, lower labor cost, and the accumulative advantages of reduced construction time resulting from rapid erection—even in sub-zero weather. Buildings can be quickly enclosed with insulated metal walls under low temperature conditions which would preclude masonry construction. Mahon Insulated Metal Walls are available in the three exterior patterns shown at left. The Mahon "Field Constructed" Fluted or Ribbed Wall can be erected up to sixty feet in height without a horizontal joint—a feature of Mahon walls which is particularly desirable in powerhouses or other buildings where high expanses of unbroken wall surface are common. See Sweet's Files for information, or write for Catalog No. B-54-B.

THE R. C. MAHON COMPANY

Detroit 34, Mich. • Chicago 4, Ill. • Representatives in All Principal Cities

Manufacturers of Insulated Metal Walls and Wall Panels; Steel Deck for Roofs, Partitions, and Permanent Concrete Floor Forms; Rolling Steel Doors, Grilles and Underwriters' Labeled Rolling Steel Doors and Fire Shutters.

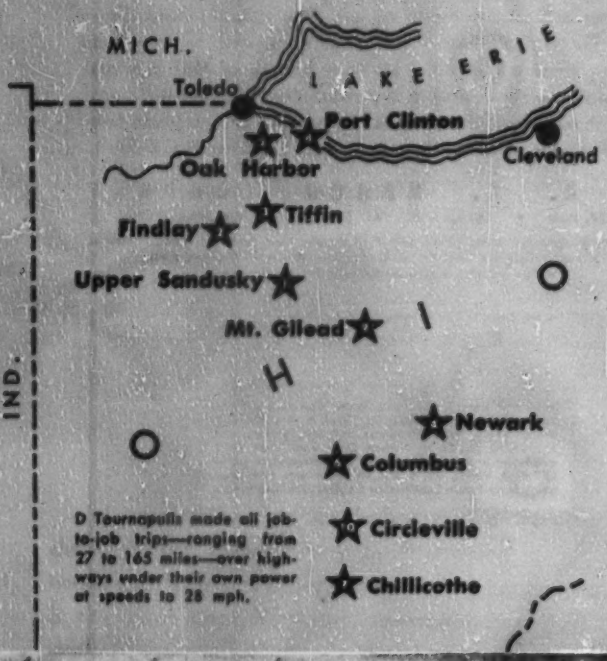
Illustrated here is the Ford Motor Company's Plant, Kansas City, Mo. 225,000 Sq. Ft. of Mahon Insulated Metal Walls, with Aluminum exterior plates, and 1,070,000 Sq. Ft. of Mahon Steel Roof Deck were employed in the construction of this ultramodern plant. Giffels & Vallet, Inc., L. Rossetti, Architects and Engineers. Long-Turner Construction Co., General Contractors.

MAHON

Low-pressure tires and power-proportioning differential provide plenty of traction and flotation for pulling through mud.

After 10 major jobs, 1500 to 5000 hours, Ohio contractor reports:

96% EFFICIENCY WITH 9 D



D Tournapulls made all job-to-job trips—ranging from 27 to 165 miles—over highways under their own power at speeds to 28 mph.

Frysinger Construction Company of Columbus, Ohio, has been moving dirt for four years with electric-control D Tournapulls. They bought their first unit in 1949, now use a fleet of 9 Tournapulls and a rubber-tired Tournatractor. The rigs have averaged 96% mechanical efficiency, with from 1500 to 5000 hours on each. Because of their dependability, plus high working speeds, all units have been exceptional producers. Look at this record of major jobs completed on or ahead of schedule:

★ *1 "D" sub-grades 10 miles of highway near Upper Sandusky.* Frysinger purchased his first D Tournapull especially for finishing work, berm construction, and back-sloping on a 178,000-yd. job on U.S. 30. Self-loading around poles and culverts, the 7-yd. rig moved 50 pay yards of topsoil, sand and silt hourly. Hauls averaged 1200′ one-way through traffic. "It did first-rate on this assignment," reported Owner Charles Frysinger.

★ *1 "D" sub-grades 3½ miles near Findlay in 13 working days.* Work included building berm side ditches and back-slopes. Performance here prompted Mr. Frysinger to purchase a second "D"

★ *2 "D's" finish-grade 6 miles of Highway 18 near Tiffin.* In typical performance on this 58,000-yd. task, rigs self-loaded 4½ pay yards of topsoil and clay in 45 to 60 seconds . . . completed average 2000′ cycles in 4½ minutes. That's 12 loads and 54 pay yards hourly. At conclusion of this slope and berm job, Frysinger's first

"D" dumps load of topsoil and sandy loam quickly. These rigs made 19 to 20 trips hourly on a 2000′ cycle.

To push-load D Tournapulls on plant grading job at Circleville, Frysinger brought in a rubber-tired Tournatractor. It averaged a 5½ to 6-yard load every 10 to 20 seconds. Load distance in topsoil and sandy loam averaged 25'. Tournatractor's fast positioning helped cut Tournapull cycle time to 2½ min. on the 2000' round trips.

TOURNAPULLS

Tournapull had 2005 hours on it and had recorded 96% mechanical efficiency.

★ *4 "D's" move 160,000 yds. for factory site.* Frysinger bought 2 more "D's" when he landed this industrial land-leveling job at Newark, Ohio. Rigs graded for roads, railroads, and building sites.

★ *Widen and re-surface 5 miles of Route 163 at Oak Harbor.* Here the 4 D Tournapulls graded 40,000 yds. in 2½ months.

★ *Construct municipal golf course in Columbus.* To build an elaborate layout of tees, greens, and bunkers, the 4-unit fleet moved 65,000 yds. Every time he got ahead of schedule on this work, Frysinger sent one or more of his rigs out to do small self-loading jobs. The rubber-tired Tournapulls drove everywhere under their own power . . . made one 90-mile trip in 3½ hours . . . a 35-mile journey through traffic in 1½ hours.

★ *Haul gravel for highway near Chillicothe.* After completion of the golf course, the 4 Tournapulls started hauling 105,000 yds. out of the Scioto River bed to grade portions of Highway 23. Sub-contracted another highway job, 165 miles away. Drove there in 1 day.

★ *Construct bridge approach on Highway 163 at Port Clinton.* Moved 41,000 yds. of long-haul dirt in 3 months — well ahead of schedule — then returned to complete the Chillicothe job — also ahead of schedule.

★ *Move 47,000 yds. for new highway near Mt. Gilead.*

★ *9 "D's" strip and grade 160-acre industrial film plant site at Circleville.* To handle 100% of this 150,000-yd. job on a tight 6-week schedule, Frysinger started with 8 Tournapulls and a Tournatractor. A 9th "D" was brought in near the end of the job. Production figures again were consistently good. Tournapulls, push-loaded by the Tournatractor, averaged 115 pay yds. of sticky topsoil and sandy loam each per 50-minute hour. Each "D" made 20 trips hourly over 2000' cycles. "We can count on top efficiency from the Tournapulls and Tournatractor," says Mr. Frysinger. "The D Roadster is a real production tool. It works well in tough going."

The recent purchase by Westinghouse Air Brake Company of the earthmoving and related business of R. G. LeTourneau, Inc., combines two firms which are world leaders in their respective fields. It brings together the earthmoving know-how of LeTourneau and the precision manufacturing and research experience of Westinghouse Air Brake. You can buy from this strong new company with even greater confidence than before.

Tournapull—Trademark Reg. U.S. Pat. Off., Tournatractor—Trademark TDP-422-B

LeTourneau-Westinghouse Company

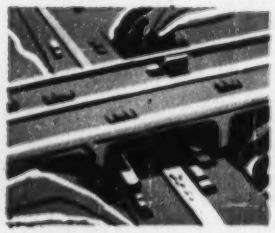
PEORIA, ILLINOIS

For tractors and implements . . .

for cars, trucks and busses . . .

NEW HYATT BARREL BEARING!

You're looking at a cross section of industry's newest find—*the bearing that's built with barrel-shaped rollers!* Developed by Hyatt, the Barrel Bearing is of true dual-purpose design—it takes load from any direction. But more than that, the Barrel Bearing is self-aligning—and misalignment of supporting parts cannot cause excessive wear, as it does with ordinary bearings. Now in volume production, this new bearing is in the newest trucks and busses, in farm, textile and construction equipment, and in many types of oil field machinery. In fact, if you own a new car there's a good chance that Barrel Bearings are in the wheels and differential.



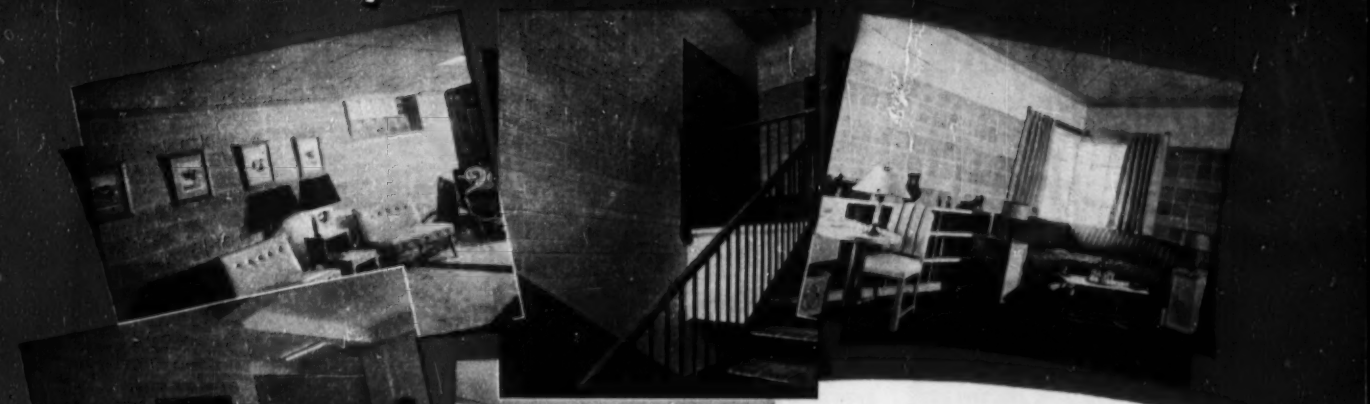
for construction equipment and many types of new machinery.

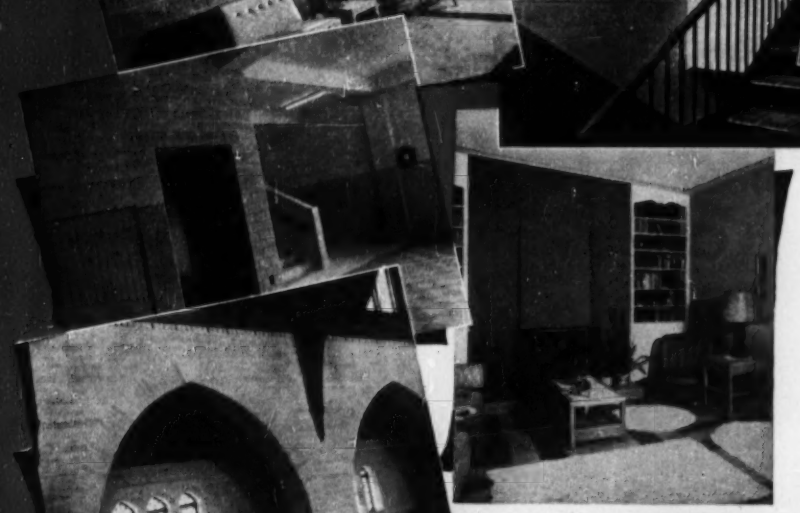
HYATT ROLLER BEARINGS

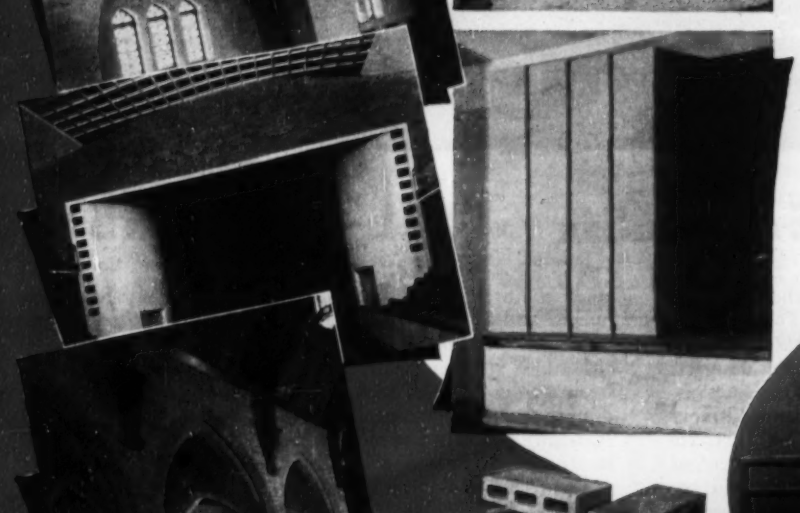
STRAIGHT BARREL TAPER

HYATT BEARINGS DIVISION • GENERAL MOTORS CORPORATION • HARRISON, N. J.

VIBRAPAC BLOCK ADDS Charm and Beauty to Building INTERIORS . . .



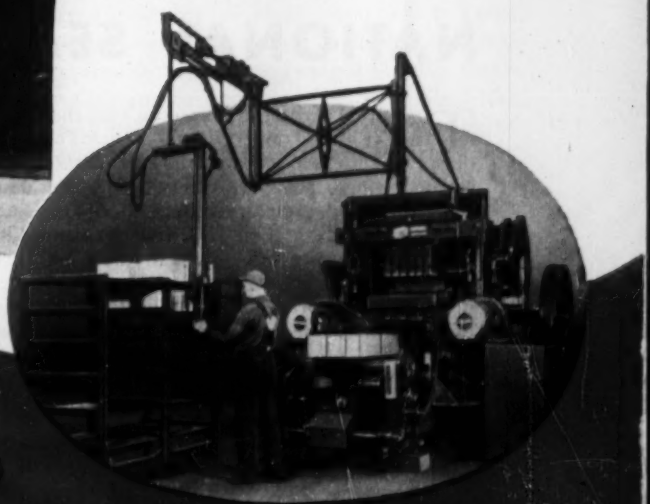


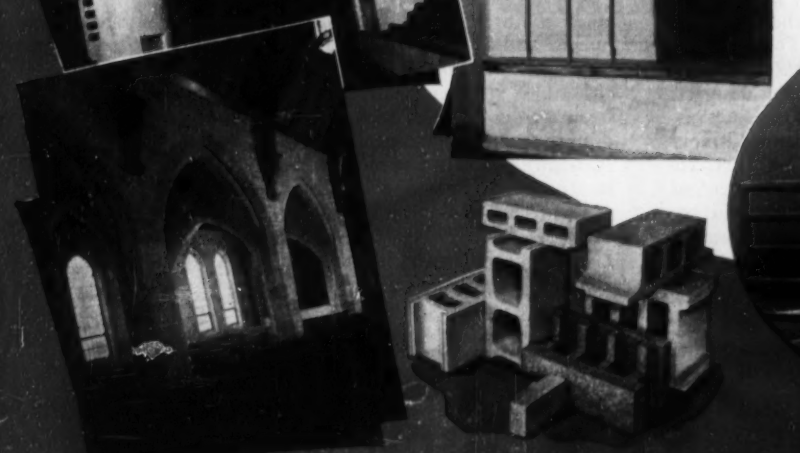


The permanent charm and beauty of VIBRAPAC Premium Block are not limited to the exterior of a building. Interior walls and partitions are made with VIBRAPAC Block, in a variety of distinctive designs and patterns. Modern, low-cost floors are built with fire-safe Floor Filler Block.

Prominent architects and builders are constantly proving that VIBRAPAC Premium Block can easily be worked into new, attractive designs not obtainable with other building materials. The cozy livability, in all seasons of the year . . . plus the economy, lifetime durability, fire-safety, insulation value and low upkeep of VIBRAPAC Block . . . make it today's popular building material.

Ask your nearby VIBRAPAC-equipped plant for bulletin illustrating VIBRAPAC Premium Block available.





BESSER

Complete Equipment for Concrete Products Plants

BESSER MANUFACTURING COMPANY • ALPENA, MICHIGAN, U. S. A.

Now you see them—

Now you don't!

NATIONAL SEAMLESS STEEL BOTTLES

THEY are still there, but you can't see them because they're buried underground—millions of cubic feet of gas at 2240 p.s.i., safely stored away, protected from storms, winds, and any other unforeseen dangers. This, then, is the safe, modern method of storing gas.

Because underground temperatures are relatively stable the year round, gas pressure does not fluctuate as it would in an above-ground installation. And underground storage is economical. Unlike surface installations, steel bottles do not have to be painted periodically, nor do they require constant inspection and protection against weather extremes. However, when maintenance is necessary, any block may be purged and taken off the line without interruption of flow from other blocks.

Each NATIONAL Seamless Steel Bottle is pierced from a solid billet of high quality steel to allay any doubts about wall strength, and every bottle is hydrostatically tested at the factory to give you the utmost in strength, safety, and low maintenance.

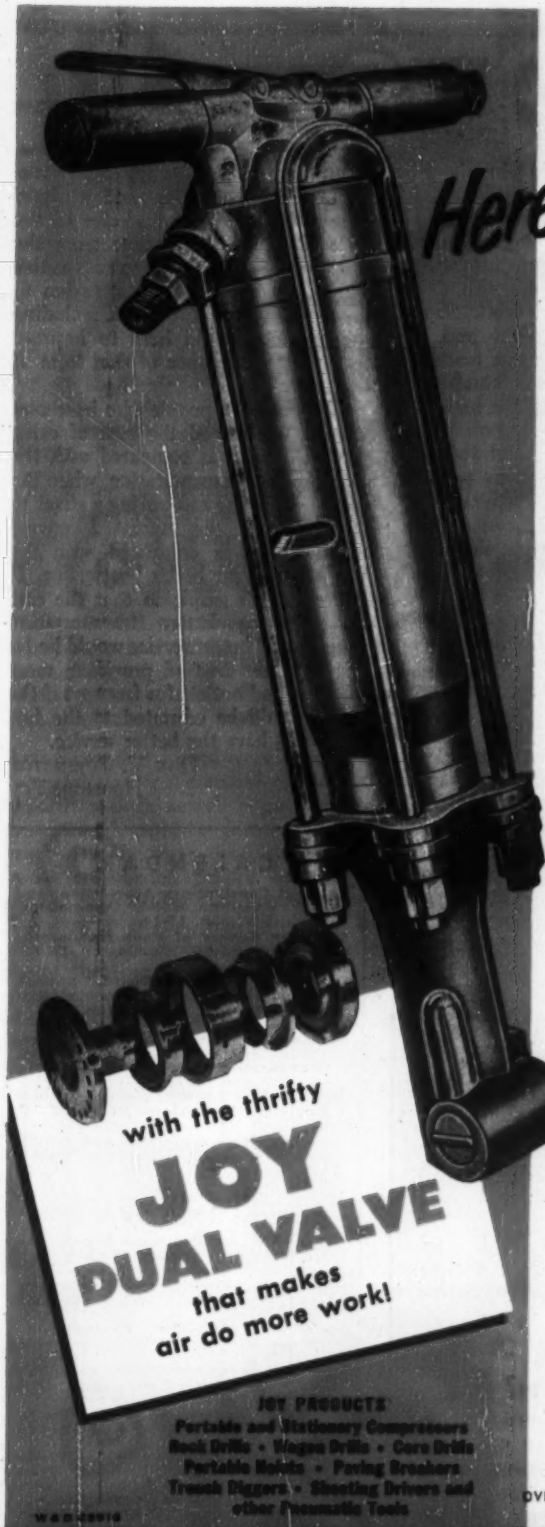
For complete details about this modern gas storage system, write today to National Tube Division, United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

NATIONAL TUBE DIVISION, UNITED STATES STEEL CORPORATION, PITTSBURGH, PA.
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

U·S·S NATIONAL SEAMLESS STEEL BOTTLES

USS

UNITED STATES STEEL



Here's your SUPER Breaker!

JOY K-89

paving breaker

For fast demolition of those extra tough-and-heavy reinforced concrete sections—for driving heavy sheet piling with a driving shoe—for all your really rugged jobs . . . the K-89 Super Heavyweight gets the work done.

A "Big Brother" to the popular line of "K" type SILVER STREAK Paving Breakers, this NEW 90 lb., K-89 really packs a wallop. Although it strikes a powerful blow to do the heavy work, a cushion of air absorbs the blow and eliminates jarring and vibration—yet the full force of the blow is delivered direct to the steel or piling. The two sturdy "U" type side rods minimize side rod breakage and allow a comparatively smooth pocket or working surface for the operator's leg.

Owners of Joy K-type Paving Breakers like the interchangeability of many parts which keeps parts stocks at a minimum . . . and like all "Silver Streak" breakers the Super Heavyweight K-89 is CADMIUM PLATED inside and out with that silver-like covering which prevents rusting, eliminates scoring of piston and cylinder, and aids lubrication. ● Write today or contact your nearest Joy office or distributor for complete details about this NEW heavy-duty breaker.

JOY PRODUCTS
Portable and Stationary Compressors
Rock Drills • Wagon Drills • Core Drills
Portable Hoists • Paving Breakers
Trench Diggers • Shooting Drivers and
other Pneumatic Tools

Consult a Joy Engineer

OVER 100 YEARS OF ENGINEERING LEADERSHIP

JOY MANUFACTURING COMPANY

GENERAL OFFICES: HENRY W. OLIVER BUILDING · PITTSBURGH 22, PA.

IN CANADA: JOY MANUFACTURING COMPANY (CANADA) LIMITED, GALT, ONTARIO

SPECIAL TRAINING

- for men who want to get ahead faster in business or industry.
- train with I.C.S. in spare time. Set your own pace and schedule.
- practical I.C.S. texts written by top men in each field.
- personalized I.C.S. instruction. Progress reports to employers.
- low cost . . . easy payments.
- 2 free books—"How to Succeed" plus catalog on subject checked.

INTERNATIONAL CORRESPONDENCE SCHOOLS
Box 2420-C, Scranton 9, Pa.

Without cost, send me free book, "HOW TO SUCCEED" and free catalog on course checked.

☐ Accounting	☐ Highway Engineering
☐ Aeronautical Engineering Jr.	☐ Hydro-Electric Power Plant
☐ Aircraft Drafting	☐ Industrial Engineering
☐ Architecture	☐ Industrial Instruments
☐ Architectural Drawing	☐ Industrial Supervision
☐ Automobile Mechanic	☐ Machine Shop Practice
☐ Auto-Elec. Technician	☐ Mathematics
☐ Bookkeeping	☐ Mechanical Engineering
☐ Building Contractor	☐ Mechanical Drafting
☐ Business Administration	☐ Practical Accounting
☐ Certified Public Accounting	☐ Practical Electrician
☐ Chemical Engineering	☐ Reading Shop Blueprints
☐ Civil Engineering	☐ Reading Structural Blueprints
☐ Cotton Manufacturing	☐ Radio Servicing
☐ Diesel Engines	☐ Railroad
☐ Diesel Locomotive	☐ Railway Postal Service
☐ Drafting	☐ Salesmanship
☐ Electrical Engineering	☐ Stenographic-Secretarial
☐ Electrical Maintenance	☐ Structural Engineering
☐ Electronics	☐ Textiles
☐ Foremanship	☐ Toolmaking
☐ Television	☐ Tool Design
☐ General Radio	☐ Traffic Management
☐ High School	Other

Name _____ Age _____
Home Address _____
City _____ State _____
Occupation _____
Special tuition rates to members of Armed Forces. Canadian residents address International Correspondence Schools Canadian, Montreal.

READER COMMENT

Fog on superhighways

SIR: I was very much interested in the editorial appearing in the Nov. 12 issue of Engineering News-Record, p. 125, regarding superhighways.

I had the experience some time ago of traveling on a black, 4-lane, superhighway on a rainy night and, although I had been over the road several times before, I was completely lost as to my position on the highway. I had been dreading getting off of this highway onto a 2-lane highway, but later found I could keep my position much better on the old highway than I could on the super-highway.

Certainly some markers should be provided for the guidance of motorists on these highways.

E. L. SCRUGGS
Lancaster, S. C.

Clarification

SIR: In the Nov. 5, 1953, issue of the Engineering News Record on page 19, a statement appears regarding the earnings of professional engineers. The second paragraph states:

"The Engineers and Scientists of America, an association of professional unions, contends in material submitted to the Labor Department that a man with 30 years of experience today is earning only twice his starting salary; whereas, 20 years ago a 30-year man was earning four times what he got at the start."

It was intended to show that at present the 30-year experienced engineer is earning only twice the salary being paid *now* to the starting engineer; while twenty years ago the 30-year experienced engineer earned four times the graduate engineer's salary *at that time.*

K. B. BROWN
Director of Research
Engineers and Scientists of America
Minneapolis

Comfort an answer?

SIR: The staff report, "Parking Solution, Slow and Not All Sure" in the issue of Dec. 10, comments on inadequate public transportation and quotes George W. Anderson's address in which he reported on the decline in transit rides.

Since I have become a regular bus rider, I have been plagued by the feeling that the designers and manufacturers of the vehicles are still using the ancient street car as a pattern.

Our city has recently received some new buses, but, except for unseen mechanical improvements and a slight improvement in the character of the seats there is little change from the early street car. It appears to this writer that a little more attention to the comfort of all the riders, including the standees would help to improve the public acceptance of that form of transportation.

There are few people who have ever seen or understood the cost of using private vehicles as compared with the cost of public transportation, when the cost of widening and paving a street to take care of the increased private vehicle travel is compared with the cost of providing better bus service. It is the writer's suspicion that the cost of providing better transportation vehicles and better service would be far less than the cost of providing more freeways and outlets for freeways if the public could be educated to the fact and could have the better service.

DON V. PURINGTON
Houston, Tex.

CALENDAR

National Constructors Association, annual meeting, Hotel Commodore, N. Y. City, Jan. 12-14.

American Society of Photogrammetry, Shoreham Hotel, Washington, D. C., Jan. 13-15.

Highway Research Board, annual meeting, National Academy of Sciences Building, Washington, D. C., Jan. 12-15.

National Association of Home Builders, annual convention and exposition, Conrad Hilton and Sherman hotels, Chicago, Jan. 17-21.

N. Y. Section AWWA, winter luncheon meeting, Commodore Hotel, N. Y. City, Jan. 19.

Land surveyors conference and exhibition, University Commons, Rutgers University, New Brunswick, N. J., Jan. 23.

Mason Contractors Association of America, Sherman Hotel, Chicago, Jan. 24-27.

Conference on Prestressed Concrete, University of Toronto, Toronto, Ont., Jan. 28-29.

Associated Equipment Distributors, Waldorf Astoria Hotel, N. Y. City, Jan. 31-Feb. 4.

Association of Asphalt Paving Technologists, Kentucky Hotel, Louisville, Ky., Feb. 1-3.

Ohio Water Clinic Conference, Ohio State University, Columbus, Feb. 11-12.

California Industrial Safety Conference, Palace Hotel, San Francisco, Feb. 11-12.

N. J. section American Water Works Association, winter meeting, Essex House, Newark, N. J., Feb. 16.

Northwest conference on road building, University of Washington, Seattle, Feb. 17-19.

Golden Anniversary Convention, American Concrete Institute, Shirley-Savoy Hotel, Denver, Colo., Feb. 22-25.

American Concrete Agricultural Pipe Association, Fairmont Hotel, San Francisco, Calif., Feb. 24.

American Concrete Pipe Association, annual convention, Fairmont Hotel, San Francisco, Calif., Feb. 25-27.

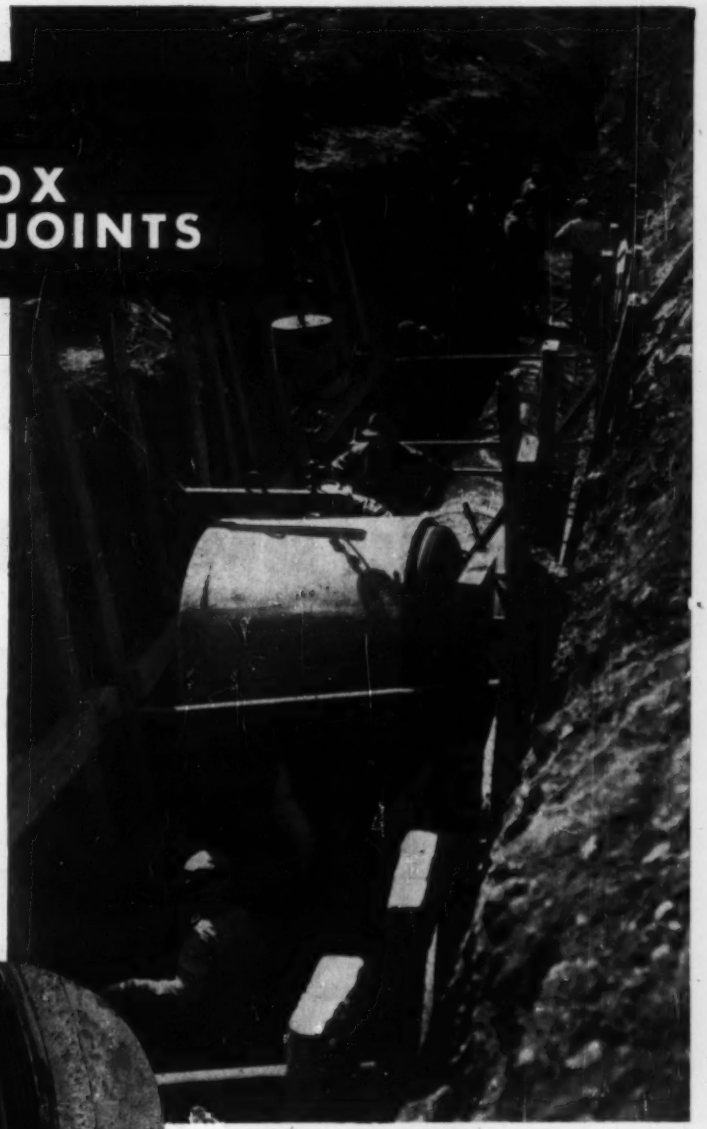
TYLOX RUBBER JOINTS

COVINGTON'S 42" concrete sewer on Second Street, laid in connection with Kentucky's Flood Wall Project, posed some tough problems for the Army Engineers in charge.

The sewer paralleled the Ohio River. The ditch was wet, it had to be sheeted and braced, the pipe swung into position, coupled and the ditch back-filled as quickly as possible to prevent cave-in.

Not only did the line have to be laid in a hurry — it had to be tight and stay tight in the face of shifting soil and soil stresses. Leaky joints could seriously affect the efficiency of the flood wall.

Tylox-coupled joints were specified, for rubber gaskets are a natural on tough jobs like this. Big bore sewer pipe can be coupled faster with rubber joints than any other way. And because there is no waiting for grout to harden before inspection can be made, back-filling can proceed immediately. The compression seal formed by Tylox gaskets assures a water-tight line; the flexibility of the joint enables the line to withstand soil stresses, helps make sure the line stays permanently tight. For a permanently tight sewer line — there's one sure answer: Tylox rubber joints.



MAKING JOINTS WITH TYLOX RUBBER GASKETS IS AS SIMPLE AS ABC

Cement tongue and snap on Tylox gasket.

Lubricate sliding surfaces with Tylox Cement.

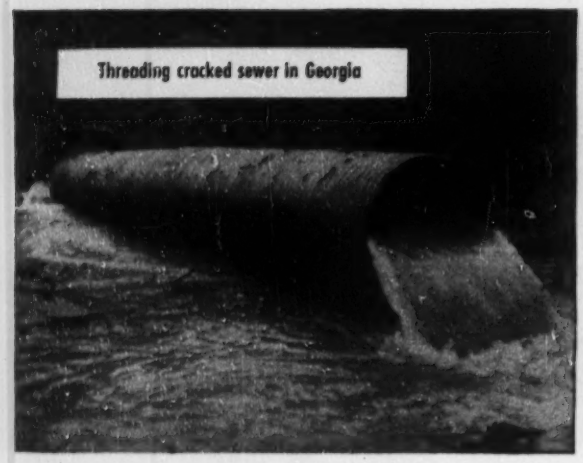
Shove the pipe home.

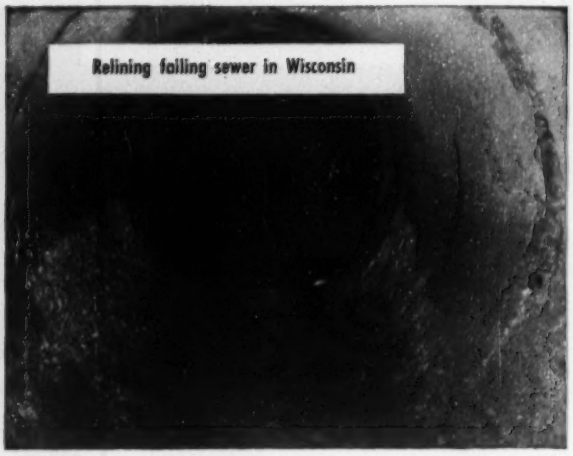
Write, wire, or phone for Specification Data and Literature on Tylox Gaskets.

HAMILTON KENT MANUFACTURING CO.

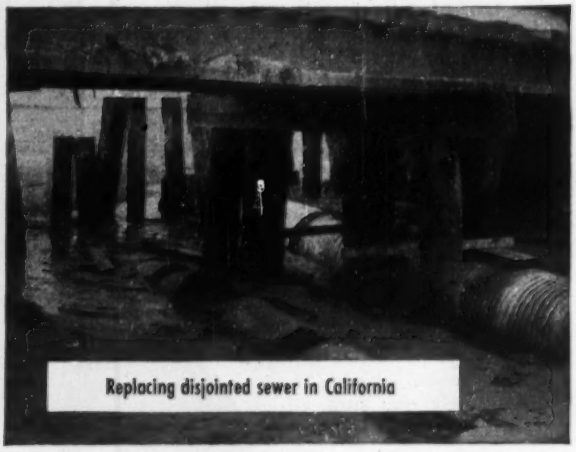
220 GOUGLER AVE. KENT, OHIO TEL. 3449

"THE ONLY PERMANENTLY TIGHT LINES ARE LAID WITH RUBBER JOINTS"





Which Armco sewer saved the most money?



Was it relining the failing sewer; threading the cracked pipe; replacing the disjointed structure; or installing an Armco Sewer in a brand-new installation? Fact is, they *all* saved plenty of money. But considering original costs, the *new* Armco Sewer will save much more through the years.

The new Armco Pipe will be faced with the same hazards that were disastrous to the other structures. But because of the flexible strength of corrugated metal, there is no danger of cracking. Positive bolted connections eliminate disjointing. And with Armco ASBESTOS-BONDED Pipe, the corrosive sewage will not cause damage. A long life for the new Armco Sewer is assured.

No two sewer problems are alike. But Armco can supply a structure to solve practically all of them. Armco Corrugated Metal Pipe and Pipe-Arch are recommended for normal sewer use; ASBESTOS-BONDED Pipe and Pipe-Arch for severe corrosion problems; MULTI-PLATE Pipe, Arch and Pipe-Arch for large area requirements. For sizes and other factual details, write us. Armco Drainage & Metal Products, Inc., 1394 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: Write Guelph, Ontario. Export: The Armco International Corporation.

Armco Sewer Structures

ARMCO

Vol. 152, No. 1

NATIONAL AFFAIRS

1954: Outlook promising for heavy construction..... 21
1953: Second biggest year on record..... 21
New corporate-practice battle?..... 23
Hot campaign is waged by toll and free road groups in Oklahoma..... 24
Federal school aid: Congress almost certain to vote more funds for defense area projects..... 25
Toll road advice: Virginia study stresses cautious approach to turnpike propositions..... 26
Wisconsin expressway commission named..... 26

LABOR

Contract construction employment in small downturn near end of '53..... 27

FEATURES

Toll highway construction to reach peak in 1954..... 28
Prefab units hasten plant completion..... 43
High school presents a variety of features..... 44

INTERNATIONAL

Australia pushes Snowy Mountains scheme as cost inquiries threaten delays..... 46
Mexican river projects near completion..... 47
Economic development planned for Arabia..... 47
Colombia announces plans for electrification program... 47

MEN AND JOBS

Welton Becket: Here's how to run a total-design plant.. 48

MUNICIPAL

Oakland seeks approval of $30-million plan to "quake-proof" schools..... 61
Louisville's needs inventoried—$287-million plan results. 61

BUSINESS AND FINANCE

Heavy December awards close a big year for construction..... 93
ENR's cost indexes move up after four months' stability. 93
Westinghouse gives away near-finished glass plant.... 94
Los Angeles contractor introduces precast concrete buildings..... 94
Natural gas firms will spend $1 billion a year until 1956. 94
Activity this week..... 94

NEW PRODUCTS

Ford's 1954 trucks.....106
Long arm of the Subscout reports soundings instantly..109
2,200 gph at 10-ft head moved by compact sump pump..110
Arc welding cable sports grease-resistant jacket.....110
New jacks translate 100 lb of air into 30-ton forces...110
Publications.....114

Reader Comment 14
Material Prices 67
Calendar 14
Construction Reports ... 75
Washington Observer ... 19
December Scoreboard .. 90
Obituaries 64
Editorials 116

THE CONSTRUCTION WEEK

FILTER ACTION?—Conscious of its $3-million investment in the project, and nettled by property-owner action that halted the work, Chicago is getting set to go back to court to clear its planned $85-million central district filtration plant.

A court order halted work on the project late in the summer (ENR Sept. 3, 1953, p. 23) after a group of property owners charged that construction of the 950-mgd plant on a fill just north of Navy pier would reduce adjacent property values and impair navigation.

City officials Dec. 18 filed a record of the lower court proceedings with the State Supreme Court; planned to follow quickly with other action in the high court.

HOT SAUCE—Nevada's Senator McCarran may have stirred up as hot a dish of Spanish fare as anyone would care for, with his statement that he would urge Congress to approve an offer of a West German construction firm to help build proposed U. S. bases in Spain. McCarran said German workers would take part of their pay in U. S. surplus farm commodities—thus saving "hundreds of millions of dollars" to U. S. taxpayers.

Kicker is that the U. S.-Spanish agreement was fought out largely on the point of maximum employment of Spanish labor, facilities and materials—on a cash basis. The Spaniards have yet to be heard from—but one complaint already was in: The Construction Men's Assn. (which claims some 10,000 overseas-working U. S. citizens as members) immediately denounced McCarran's statement, said there would be trouble enough as it is getting U. S. citizens on the job.

NEW ROAD HAZARD—Motion pictures—accused of many things in the past—have a new one to contend with. Virginia has found that the films are becoming highway hazards.

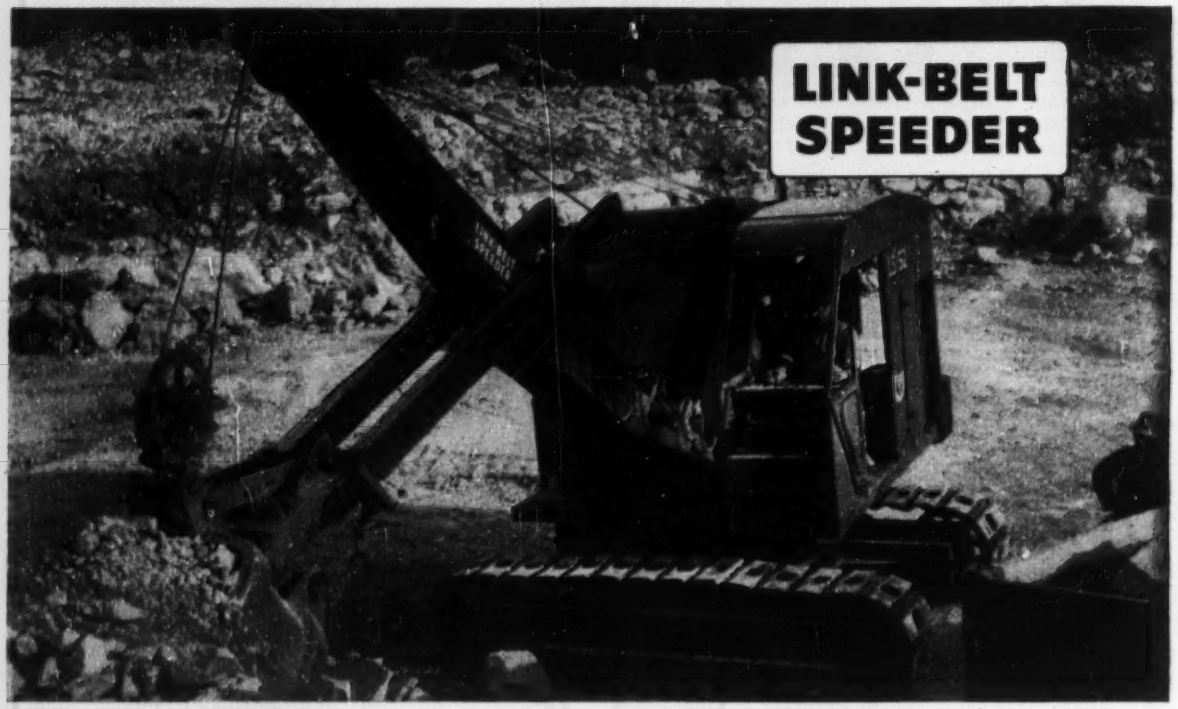
Virginia's Advisory Legislative Council proposed a state law requiring that drive-in theater screens be "well hidden" from main highways. It said "numerous accidents" had been caused by drivers distracted by glimpses of screen action from the roads.

THE WEATHER—Here's what the U. S. Weather Bureau's 30-day outlook for January (to be read with tables in ENR Dec. 24, 1953, p. 40) calls for:

Temperatures to average below seasonal normals over most of the nation, except over the Northwest and New England, where above-normal readings will be expected. The most unseasonable cold is indicated in the west Gulf States and the central Mississippi valley. Precipitation is expected to exceed normal in the Gulf States and areas east of the Appalachians—much of it in the form of snow north of Virginia. Subnormal amounts are indicated west of the Continental Divide and in the Central Plains.

Before you buy:

Talk to operators!



Notice the short-throw "Speed-o-Matic" levers. They operate at the touch of a finger.

Operators world-wide prefer the fast, easy, trouble-free *Speed-o-Matic* operation

WENDELL BLAIR, Inkom, Idaho — "... fast, dependable, not a bit of lost time yet."

ROBERT GARNER, Lilbourn, Missouri— "... dependable, accurate, works steady, does more."

LE ROY M. GEORGE, Tipp City, Ohio — "... easy on the operator, smoother, faster and surer."

HOWARD EARL DEGREENIA, Westfield, Mass. — "It doesn't jerk like other rigs I've run."

WITH "Speed-o-Matic" control, operators don't have to fight the rig ... "end-of-the-shift" letdown is minimized. That's why they prefer "Speed-o-Matic" ... why "Speed-o-Matic" means more profit for you.

What's more, these *power-driven* hydraulic controls allow faster passes ... minimize wear and tear ... require far less maintenance than manual, air, vacuum, booster or other control systems ... and provide perfect "feel of the load."

To get all the facts on "Speed-o-Matic" controls and how they increase production, see your distributor or write:

LINK-BELT SPEEDER CORPORATION
Cedar Rapids, Iowa

13,159

LINK-BELT SPEEDER
CORPORATION

BUILDERS OF A COMPLETE LINE OF CRAWLER, TRUCK AND WHEEL-MOUNTED SHOVEL-CRANES

FACTORY-TRAINED DISTRIBUTOR SALES AND SERVICE SPECIALISTS ...EVERYWHERE

WASHINGTON OBSERVER

Faster amortization of new machinery, equipment, and buildings is the Administration's key proposal for keeping employment and prosperity high. In general, the idea is to step up the deductions you can take on capital equipment. The proposal at the outset is to allow a write-off of two-thirds of the cost in the first five years of the life of the property. The figures may change before they are written into law.

This added inducement is being counted on by the top Eisenhower strategists on the business outlook to give the economy what it needs to keep up the already high rate of investment in new plant and equipment.

Democratic powers in Congress are fighting this theory. Senator Paul Douglas, a top economist himself, argues that the way to keep off a recession now is to hand out more tax cuts to consumers. He and other Democrats will argue loud and long that consumer spending, not business spending in plant and equipment, is what needs boosting to keep the business slide from growing.

•

Liberalizing unemployment compensation benefits will be pushed by the Administration—in Congress, and before state legislatures meeting this year. Jobless pay is regarded as quick anti-depression medicine, putting purchasing power right in the pockets of those who need it most. Secretary Mitchell wants benefits increased, and the weeks of eligibility extended. The problem of unemployment pay is a knotty one in construction, because the workers have so many employers in the normal course of a year; it may take some special treatment to improve benefits.

•

Lobby opposition to the Echo Park Dam—Part of Interior's approved Upper Colorado River project—is being organized by wildlife and recreation forces. Representatives of the National Park Assn., National Wildlife Federation, American Planning and Civic Assn., Wilderness Society, Wildlife Management Institute, and Outdoor Writers Assn. have formed the emergency committee on natural resources. Main point: Building of Echo Park is a "grave" threat against the national park system.

•

Better statistics on water and sewer construction and maintenance are being taken by the government. Bureau of Labor Statistics and Commerce are improving activity in those fields, primarily by adding in such work as is done by municipalities themselves. This will improve figures on the market for suppliers.

•

Mergers of makers of building materials and construction equipment may not come so frequently from here on out. Reason: The Federal Trade Commission has come up with a much tougher anti-merger policy, spelled out in the first decision ever handed down under the newly amended Section 7 of the Clayton Act. Net effect of the decision is this: If merger of two competitors "may tend" to lessen competition, then it's up to the companies to prove otherwise—which is a difficult thing to do. In its first decision (in the Pillsbury Mills Case) the commission found a "prima facie ease" of illegal purchase of competitors—which the company now has a chance to rebut.

See at a glance

which Kodagraph Material will solve today's drawing reproduction problem

Free . . .

this handy wall chart lets you select immediately the Kodagraph Reproduction Material which will give you best results in reproducing any type of drawing or other original in any type of print-making equipment.

Whether you do your own print-making or order from a local blueprinter, you will find this selection chart a helpful time-saver. And a money-saver, too, for these materials do not involve complicated techniques and are surprisingly low in cost.

The chart tells you, among other things, *which* Kodagraph Materials are specifically designed to give you sharp, clean intermediate prints of old, soiled drawings; which Kodagraph Materials are best for reproducing blueprints, microfilm negatives, drawings with extremely fine detail, printed halftone pages, etc.

In addition, it gives you concise descriptions of all the materials in the versatile Kodagraph line, some of which you may not be familiar with. Also, you'll find helpful tips on processing. *It's well worth sending for today.* If you'd like more than one chart, free of charge, just say how many.

Kodagraph Reproduction Materials

"THE BIG NEW PLUS" in engineering drawing reproduction

----------MAIL COUPON TODAY FOR FREE KODAGRAPH SELECTION CHART----------

EASTMAN KODAK COMPANY, Industrial Photographic Division, Rochester 4, N. Y.

Gentlemen: Please send me a free copy of your Kodagraph Selection Chart.

Name_____ Position_____

Company_____

Street_____

_____ Zone_____ State_____

Kodak

1954: Outlook promising—

ENR sample of engineer and architect plans for '54 points to better than anticipated prospects for new year

How big a year is in store for heavy construction?

ENR has found at least a partial answer to this question in a new survey that indicates more work than in '53—perhaps a good deal more than generally anticipated.

Reports from 435 consulting engineers and architects show:

• 53% have more work on their drawing boards scheduled for '54 contracts than they had for '53 at this time last year (31% had less; 13% about the same).

• Projects listed by the 435 firms add up to $2.4 billion—topping by 27% the dollar volume of the '53 work on the boards at the same time a year ago.

This sampling of '54 plans makes ENR's Oct. 1 forecast of a probable 2½% decline in '54 look pessimistic. While a 27% increase in dollar volume appears to be too much to assume for the whole industry, here, at least, is one explanation of why construction volume is now rolling at a higher rate than expected. It now looks like this momentum will carry over into 1954.

This cross section runs a little high in the ratio of larger firms. It probably has considerable bias on the plus side. But, how much, only further field testing can determine.

• **The bright spots**—State and municipal projects, which reached a new high in '53, also are a big factor in this sample of '54 plans. For example, these plans cover sewerage works at an estimated cost of $142.4 million, which is 61% above the dollar value of the '53 projects. Likewise, waterworks plans call for $60.2 million in '54 construction, up 26%; public schools $374.3 million, up 37%; highways and streets, $191.6 million, up 26%; public housing, $91.5 million, up 35%; bridges, $180.8 million, up 115%.

Another sizable advance in commercial construction activity is indicated by this group of architects and engineers, who have plans for $331.9 million in '54 construction—61% greater than their '53 dollar volume. Even their industrial construction work is holding up well, with $207.6 million worth of projects for only a 4% decrease from the '53 level. Mass housing projects listed for '54 construction have a total estimated cost of $186.5 million, which is 16% above the '53 figure.

• **The darker side**—Although a highly satisfactory '54 work load is indicated by this sampling, a number of the architects and engineers expressed misgivings as to the future and in some cases see a decline in new work starting late this year.

And, here's another significant portent: It's already evident that new projects aren't coming in as fast. While 38% reported new work coming in at a faster rate than last year, 32% said it's slower and 25%, about the same.

Purely local conditions, of course, affect the outlook for individual architects and engineers. Whereas recent school bond referendums foreshadow a boom in school construction in some areas, other sections are stymied by having reached their limit of bond indebtedness. In some western states, drought losses and poor farm prices cloud the future for new projects.

• **The regional picture**—The heavy construction outlook for '54 looked rosier to firms reporting from New England, the Middle Atlantic and the Far West. The Midwesterners saw the picture as fair to middlin'. Firms in the South and states west of the Mississippi were off to a slower start.

Of the 17 New England firms reporting, 82% have more work on the boards for '54 than they had for '53 at this time last year. New work scheduled by all 17 firms has an estimated total cost of $95 million, up 66% over the corresponding plans of a year back.

In the Middle Atlantic states, 56% of the 78 firms covered by the survey reported more work for '54 and the value of all projects listed was $1,011

(Continued on page 22)

1953: Second best

Heavy construction has good year despite sharp cutback in federal work

New and unexpected peaks in the volume of private work and state and municipal projects offset a sharp cutback in federal awards to make 1953 another good year for the heavy construction industry.

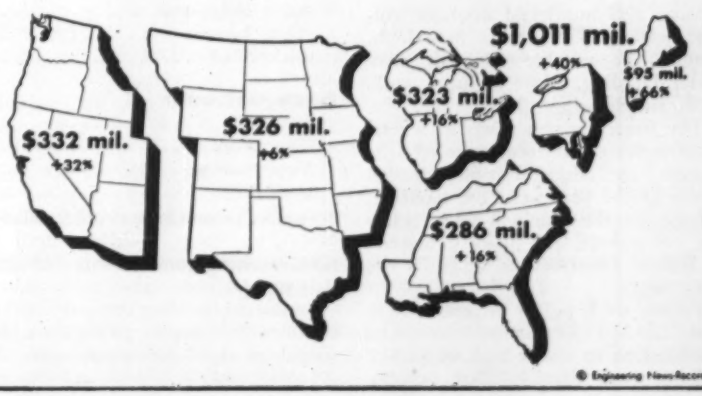
It was, in fact, the second biggest year on record. Contracts totaled $15.2 billion—5% below the all-time high of $15.7 billion scored in 1952.

An inevitable drop in awards for atomic energy plants—a dominant factor in '52 when the Atomic Energy Commission launched its gigantic postwar development program—more than accounted for the 5% drop. Block out AEC from the '52-'53 picture and you find an overall increase

(Continued on page 22)

Work now on the drawing boards of 435 engineers and architects shows 27% more heavy construction scheduled for '54 than '53

Projects costing $2,372,015,000 are scheduled for construction in '54



. . . 1954

million or 40% over the comparable '53 figure. Sixty-three percent of the 54 firms reporting from the Far West were ahead; estimated cost of all work reported was $322 million, up 32%.

A little over half—52%—of the Midwest architects and engineers had more work for '54 thus far. Some 80 firms listed projects for '54 construction with an estimated cost of $323 million or 16% above the level reached in '53.

Less than half the firms in the South and West (between the Mississippi River and the Rockies) reported having more work on the boards compared to a year ago. In the South, 49% reported having more, 36%, less, and 11%, about the same. Only 46% reported a heavier volume of work for '54 thus far in the West; 38%, less, and 14%, about the same. Dollar value of projects listed by 70 firms in the South was $286 million, up 16%. In the western states, the estimated cost of projects listed by 136 firms was $326 million, up only 6%.

While 71% of the New Englanders reported new work coming in at a faster rate, the returns from other regions indicated a much slower tempo. Getting new work at a faster rate were 44% of the Midwest firms, 38% of the Middle Atlantic, 39% of the Far West, 32% of the South, and 32% of the West.

. . . 1953

in 1953 volume of 13% despite the marked decline in all other federal work.

While heavy construction contracts were hitting a near record volume, total new construction put in place reached an all-time high of $34.7 billion as estimated by federal government statisticians. In addition, an estimated $11.8 billion was spent on maintenance and repair. Overall increase was 6% above the previous record year of '52.

State and municipal contract volume was up 22% to a new high. Among the notable increases were bridge building, 78%; highway work, 26%, and sewerage, 37%.

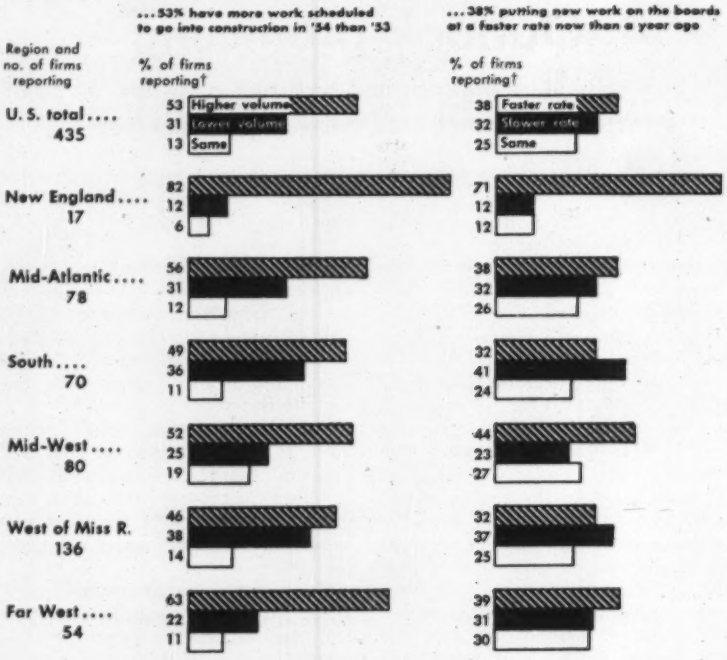
The freeze on new starts in federal construction that accompanied the change in administration thawed slowly as the year went by. Contract volume for the year was 69% below the '52 awards. All major categories of federal construction were in the same boat.

Private work in '53 increased 20% over '52. A 35% gain in commercial construction to a new high of $1.157 million more than fulfilled expectations resulting from de-control of materials supply.

Industrial building not only held up contrary to some predictions but scored a 15% increase over '52. Awards reached $3.178 million, second highest on record. Private unclassified—primarily pipelines and transmission facilities—showed a 63% increase in contract volume. At $827 million, this category was close to the record set in 1950.

Big construction year in '54?

ENR field survey of 435 consulting engineers* and architects* shows . . .



†Percents do not add up to 100 because some firms are uncertain about 1954 plans

*Firms who signed up $100,000 or more in new business in '52 as reported by Engineering News-Record and the Construction Daily

© Engineering News-Record

'53 heavy construction contracts

(As reported by Engineering News-Record and the Construction Daily)

	1953 53 weeks	1952 52 weeks	% chge based on av wk.
	millions		
All construction	**$15,170.9**	$15,689.2	— 5
All construction excluding AEC	15,098.8	13,360.4	+13
Private	**8,665.3**	7,122.6	+20
State & municipal	**5,088.0**	4,075.6	+22
Federal	**1,417.6**	4,501.0	—69
Public Works			
Waterworks*	247.0	231.1	+ 5
Sewerage	431.1	304.4	+37
Highways	1,792.5	1,396.5	+26
Bridges*	752.3	413.2	+78
Earthworks, waterways	374.3	495.9	—25
Public bldgs, excl hsg	1,736.5	4,292.6	—60
Public housing	375.5	606.3	—39
Unclassified	805.3	854.7	— 6
Private construction			
Industrial	3,178.1	2,722.4	+15
Commercial	1,156.9	843.5	+35
Mass housing	3,464.2	3,001.9	+13
Unclassified	857.2	526.8	+63

* Includes private bridges: $8.9 million in '53; $18.0 million in '52.

New corporate-practice battle?

Groups line up for second try to amend New York State's license law to permit corporate engineering work

A much-enlarged group of corporations this week was preparing for a new try to amend New York State's engineer license law.

The objective is a change in the present law that would legalize general corporate practice of engineering, and strengthen the legal position of corporations now practicing within the state under somewhat nebulous permits.

The new action will be the second effort within two years. An attempt to amend the law along the same lines was defeated before it came to a vote in the state legislature last year—largely through the opposition of the New York State Society of Professional Engineers (ENR March 26, 1953, p. 24).

But, where the 1953 action was carried through by a group of seven major engineering corporations, this year's activity is backed by some 34 such organizations—including the original seven—under the name of the Committee on Engineering Laws. Spokesmen for CEL indicated that they were prepared to push for the legislative action after more than six months of negotiation with NYSSPE representatives had failed to produce agreement.

• **Powder keg**—Center of the corporations' attack this year—as in 1953 (ENR March 12, 1953, p. 21)—is a provision of the state education law that prohibits the practice of professional engineering by any corporation unless it meets three conditions: That it was incorporated in New York State; that it was practicing and has continued to practice on and after April 15, 1935, and that the chief executive officer and all persons carrying out actual practice of engineering were licensed professional engineers. The law virtually exempts corporations that construct or install machinery or apparatus engineered by them; further, its provisions prohibit the formation of new corporations, and the use of the word "engineer" or "engineering" in corporate names.

• **Powder train**—This provision was not too dangerous a powder keg until 1952, when the state legislature laid a train to it with an amendment requiring biennial registration of corporations (which had not been previously required to register), and making such registration mandatory by March 1, 1953 under pain of being declared in illegal practice.

That brought immediate results. Many corporations suddenly found themselves in what they considered an impossible legal position: They would be unable to register properly.

• **Explosion**—Reaction was immediate—in the form of the attempt to amend the law. A bill (the Bennett-Carlino Bill) would have required that "the chief executive officer in charge of engineering" and all those responsible for engineering activities be licensed as professional engineers.

NYSSPE immediately plunged into the fight in opposition—centering its fire on the question of responsibility—to the possibility that a corporation-employed professional engineer might be forced to approve a design not in accordance with best practice, and that in this manner unlicensed and not professionally qualified persons might in fact be practicing.

• **Fizzle**—Over a period of a month the argument reached somewhat hysterical heights on both sides, with organizations ranging from the corporations and the engineers to the state Parent-Teacher Assn. becoming involved.

The result was defeat for the proposed amendment. Proponents withdrew the measure.

Subsequently—taking advantage of a ruling by the state's education department (ENR June 18, 1953, p. 25)—a number of the embattled corporations obtained "certificates" that made it possible for them to continue in operation.

• **Second try**—Chastened by the experience—but now heavily strengthened—the corporations made overture to NYSSPE for discussions on the problem and an attempt to work out differences.

Accordingly, in June 1953, a Committee on Engineering Laws group headed by Ronald B. Smith, a licensed professional engineer who is a vice-president of the M. W. Kellogg Co., was named to meet with a committee appointed by NYSSPE, under chairmanship of James F. Fairman.

Representatives met periodically through the summer, their meetings culminating in issuance—by the NYSSPE group—of a series of searching questions to the corporations, divided roughly into three groups: Questions concerning corporate practice, questions concerning partnership practice, and non-profit membership corporations. The same questionnaire was circulated to NYSSPE membership for comment. Meanwhile, three drafts of the CEL-proposed amendment were submitted to Fairman's committee for comment and suggestion.

• **Key disagreement**—By the end of December, CEL was in receipt of letters from the NYSSPE committee which appeared to agree to all proposed changes—except the modification of the stringent restriction that corporations must have been chartered before the April 15, 1935, cut-off date.

The new amendment would let the cut-off date stand as originally written, but would provide a loophole by making the cut-off date inapplicable to corporations—whatever their home state and date of incorporation—provided that the corporation otherwise conforms to provisions of the law as amended.

Key point in the proposed amendment is this one:

"Nothing herein shall apply to a corporation, wherever organized, practicing or offering to practice . . . provided that an officer . . . of at least the rank of vice-president shall be in responsible charge of engineering activities in the state of New York, and . . . that such officer, as well as any other persons in responsible charge of engineering activities . . . in the state . . . shall be a licensed professional engineer. . . ."

Proponents charge that NYSSPE's apparent insistence on perpetuating the 1935 cut-off date without change would nullify the effect of the amendments—would have the effect of strengthening the position of the few "grandfather" corporations, do nothing at all for newer, or out-of-state organizations.

Other suggested amendments would require naming not only of all officers and licensed engineers in a corporation, but also of "controlling persons"; and would change the law to bring corporations specifically and stringently under penalty and disciplinary provisions already provided.

• **New train?**—With apparently firm objection of NYSSPE to the key change, the Committee on Engineering Laws has given notice it will proceed to enter its bill into the legislative hopper early in January.

To strengthen its position, CEL announced two weeks ago that it had engaged William L. Pfeiffer—former chairman of the State Republican Committee—as a lobbyist for its proposal, and has employed two attorneys and a full-time secretary.

Turnpike vote

Hot campaign is waged by toll and free road groups in Oklahoma

Oklahoma voters will go to the polls Jan. 26 to indicate whether or not they favor further toll road construction as provided for by the last session of the state legislature.

The referendum will climax a spirited campaign that is being waged by the Oklahoma Free Roads Assn. and the Citizens Turnpike Assn. The latter group was organized last summer to counteract the drive by the anti-toll road OFRA. Now TV, radio, newspaper advertising and any other available mediums are being employed in true electioneering style.

At issue are two measures which would authorize three turnpike projects providing traffic studies find them feasible. The proposed toll roads would run from Tulsa to the Missouri line on the way to Joplin, Mo., from Oklahoma City north to the Kansas line on the way to Wichita, and from Oklahoma City southwest to the Texas line on the way to Wichita Falls.

The state's $38-million Turner Turnpike running from Oklahoma City at Tulsa opened last May (ENR May 28, 1953, p. 24).

Opponents of the toll road system had hoped to delay the issue until the general election next November, when local candidates would have been put on a hot political spot. However, Gov. Johnston Murray—himself a strong toll road booster— took court action that forced the free road group to file ballot titles and get on with the election.

Mexican ports to provide Southwest with sea-link

Arizona will have a seaport when harbor work to be undertaken this year is completed at Guaymas and Mazatlan, on the east coast of Mexico's Gulf of California. The Mexican government has awarded contracts to begin dredging and construction of warehouses, breakwaters and railway yards for the handling of the biggest cargo vessels at the two undeveloped ports.

Guaymas, at the northern section of the gulf, is only 260 mi from the U. S. border and is linked to the U. S. by railway and expressway. Mexico has indicated that $22 million may be spent eventually at Guaymas to provide port facilities.

An official of the Tucson, Ariz., Chamber of Commerce estimates that in fiscal 1951 $12 million could have been saved on the movement of 5,000 carloads of freight moved into Tucson, had the Mexican ports been available. When the ports are ready, shipments from the eastern U. S. will move through the Panama Canal by ship, rather than over land by truck or train.

New Mexico, Nevada, and Utah also will benefit from reduced freight costs that may come about through the existence of the new ports.

An initial contract of $3.5 million to start the port work has been awarded to the Mexican subsidiary of Utah Construction Co., San Francisco, Calif. Along with breakwater work and warehouse construction, Utah will dredge Guaymas harbor from 22 ft to a 32-ft depth and will remove two large hills facing the bay to get level ground for the warehouses.

Municipal corporation utility fees upheld

Arizona's Supreme Court has ruled that a municipal corporation is exempt from the law prohibiting public utility corporations from making a charge for utility connections.

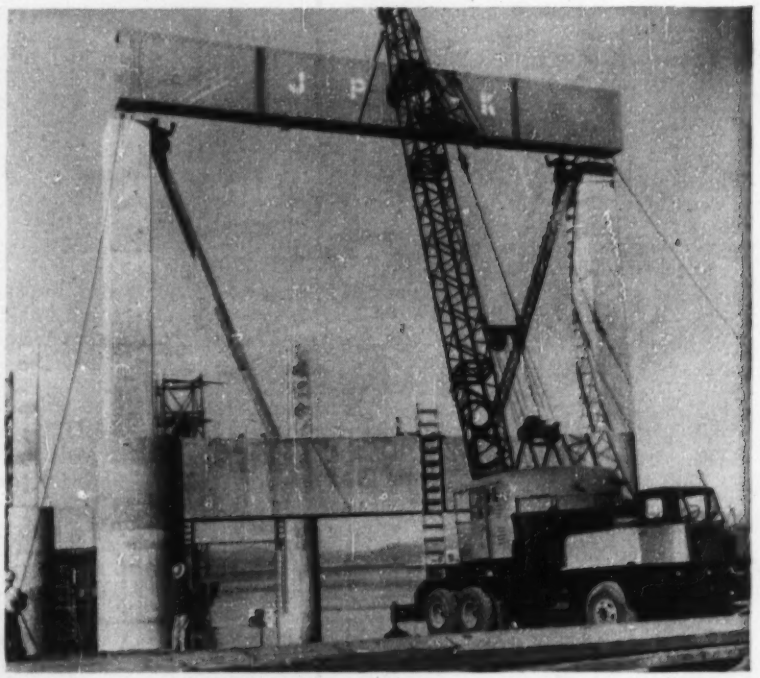
The ruling was made in a case involving the Salt River Valley project agricultural improvement and Power District and the Rubenstein Corp., a construction company which built 500 homes at Williams Air Force Base near Chandler.

The district provided power for the residences, charging a connection fee of $25 per unit. Rubenstein Corp. sued to recover the money on the ground that utilities are prohibited from levying such a charge.

Truck terminal proposed

The construction of a mile-square, $20-million truck terminal has been proposed by the Cleveland, Ohio, Electric Illuminating Co., to clear hundreds of trucks from Northeastern Ohio communities.

The Cleveland depot, if built, will cut the mileage wasted in the interchange of freight between scattered truck terminals, will take non-truck traffic "out of the hair of the trucking business," will offer a chance for functional design of terminals and offer plenty of opportunity for growth, according to Arthur J. Bazeley, general supervisor of market research, and Charles D. Laidlaw, Market Research Analyst, who presented the plan at a meeting of the Cleveland Motor Transportation Assn.



First steel set on bay bridge job

Steel erection began for the $62-million Richmond-San Rafael Bridge across the north arm of San Francisco Bay when cranes set a 15-ton cross girder on the Richmond approach. Of double-deck cantilever truss construction, the bridge will have two 1,000-ft main spans, each with 480-ft side spans, thirty-six 289-ft trusses, and thirty-six 100-ft girders. The highway toll bridge is scheduled to open in 1956. Judson Pacific-Murphy Corp. and Peter Kiewit Sons' Co. hold a $21-million contract for the superstructure work on the project.

Federal school aid

Congress almost certain to vote more funds for defense area projects

President Eisenhower is almost certain to ask more funds to aid school construction in defense areas. And Congress probably will go along with such a request.

Congress last year voted $70 million for school construction and extended the period for applications to June 30, 1954. The U. S. Office of Education up to Nov. 24 had received applications from 612 school districts for 826 construction projects involving more than $130 million of federal aid.

Not all of the $70 million can be used to take care of these requests. Under the law, the Office of Education has set aside nearly $20 million for special school construction purposes—$8 million for federally owned schools on federal property, $3 million for temporary school construction, and another $8 million for school districts that educate children from families living on federal land, such as tribes on Indian reservations. That leaves only about $50 million for school districts in defense areas.

About 200 projects can be financed from this fund, according to estimates of the Office of Education. Reservations now are being made for top-priority projects in districts showing the greatest immediate need. Up to this week, the office had reserved nearly $9.5 million for 41 defense areas. Reservations, it is hoped, will be completed by March.

Requests for more than $80 million of federal assistance for some 600 projects will have to be held over. The President's budget message is expected to request additional funds for these schools. And the Administration probably will ask also for an extension of the application period.

School districts in defense areas now can apply for aid only to supply minimum necessary facilities for children entering school before June 30 of this year. New military bases and new Wherry Act housing to be occupied after that date will throw a heavy load on some local school districts. An extension of the application period will permit these districts to apply.

Since 1950, when the original law took effect, a total of $341 million has been allotted for 1,337 critically needed school building projects, the 1953 law made some changes in the percentage of federal aid to be granted.

From the $70 million now being allotted, the federal share remains at 95% of the cost of minimum school facilities for children whose parents both live and work on federal property, but it is reduced to 50% from the former 70% for children of parents who either live or work (not both) on federal property.

For the influx of children of parents who come into the district as a direct result of federal activity—for example, to work on defense contracts—but who neither live nor work on federal property, the government contributes 45% of the cost of minimum school construction.

John S. Macdonald dies; noted tunnel contractor

John S. Macdonald, 60, of Scarsdale, N. Y., vice-president and chief engineer of the Walsh Construction Co., died Dec. 31 at Bronxville, N. Y. Only recently, Mr. Macdonald had returned from France where he was engaged in supervising the construction of airbases by a group of American firms known as Construction Management & Engineering Associates.

A 1913 graduate of Dartmouth College, he received his C. E. degree at the Thayer School there. He started out with Patrick McGovern, Inc., New York, ultimately becoming president and chief engineer. When the McGovern organization was dissolved, he joined the Walsh Construction Co., as vice-president and chief engineer.

Projects with which he was associated include the City Tunnel No. 2 for the New York Board of Water Supply, and the Delaware Aqueduct of the same agency; the Queens-Midtown Tunnel, New York; the Broad Street Subway in Philadelphia; the United Nations Headquarters, and the Knolls Laboratory for the Atomic Energy Commission.

During World War II, Mr. Macdonald served as general manager of Walsh-Kaiser, Inc., on ship construction for the U. S. Maritime Commission.

Radar to spy on smoke; see if it's making rain

The Weather Modification Corp. of Redlands, Calif., is going to use radar this winter in hopes of actually getting motion pictures to show silver iodide forming rain drops.

Purpose of using radar is twofold: 1. to locate "promising clouds" when they are as much as 100 mi away from the agency's rainmaking machines, and 2. to send radar waves into seeded clouds to show the iodide crystals action, forming raindrops. The company hopes to record these data on motion picture film.

Installation of the radar device on Palomar Mountain, about three miles southwest of the famous observatory with its 200-in. Hale telescope, was disclosed by Floyd Jones, meteorologist for Weather Modification.

The corporation is working under a four-month contract with the San Diego Weather Corp., which was formed by the City of San Diego, the county and most of the irrigation districts and water companies in the county.

Thirty-eight smoke generators, spaced throughout the county, produce propane flames at high temperature, into which the silver iodide is fed in liquid form. This yields a smoke which rises, hits cool air and condenses into microscopic crystals of iodide in the clouds.

Pumped-power project to serve 3 states

Further details of the proposed pumped-storage power project to serve utilities in western New York State, Pennsylvania and Ohio were disclosed last week by the Energy Accumulation & Exchange Corp. of New York City.

The firm recently filed a declaration of intent with the Federal Power Commission (ENR Dec. 31, p. 17).

Water for the project would be pumped from Lake Erie to a reservoir to be built in hills about four miles south of the lake at a point about midway between Dunkirk and Chautauqua Lake. This reservoir would include a pond known as Bear Lake at the headwaters of Cassadaga Creek. It would be formed by two dams, one 90 ft high and 6,000 ft long and the other 100 ft high, and 7,200 ft long.

The reservoir would be about six miles long and have a storage capacity of 500,000 acre-ft. Its maximum surface elevation would be 1,392 ft or 820 ft above Lake Erie, and a drawdown of about 70 ft would be possible.

Current plans call for an initial installation of five pump-turbine units of 80,000-kw output each at an estimated $60 million for the pumping plant, penstocks and reservoir.

J. F. Shadgen, promoter of the scheme, states that a weekly cycle of operation is proposed, filling the reservoir over each weekend when the industrial load on the Niagara power network is low and drawing it down progressively at times of peak load during the following week. This, he states, will make it possible for the existing electric power companies to make better use of the large amount of flow at Niagara that can be used for power generation during night hours.

Toll road advice

Virginia study stresses a cautious approach to turnpike propositions

A cautious endorsement of toll highways has been given by the Virginia Advisory Legislative Council in a recent study prepared for the state's General Assembly.

The council takes the view that toll roads—if built in Virginia—should be restricted to highly congested areas and constructed only after approval by the State Highway Department.

These are among the suggestions made by the advisory group:

- Toll roads should be constructed, maintained and operated by public authorities created by the state. "Obsolete" laws that permit private firms to build turnpikes should be repealed.
- The agency to undertake construction of a toll road might be the highway commission—or a separate authority created by the assembly. In any case, every project should be approved by the commission.
- The ban against turnpike construction within the corporate limits of Virginia cities should be removed. The worst traffic bottlenecks usually are in cities.

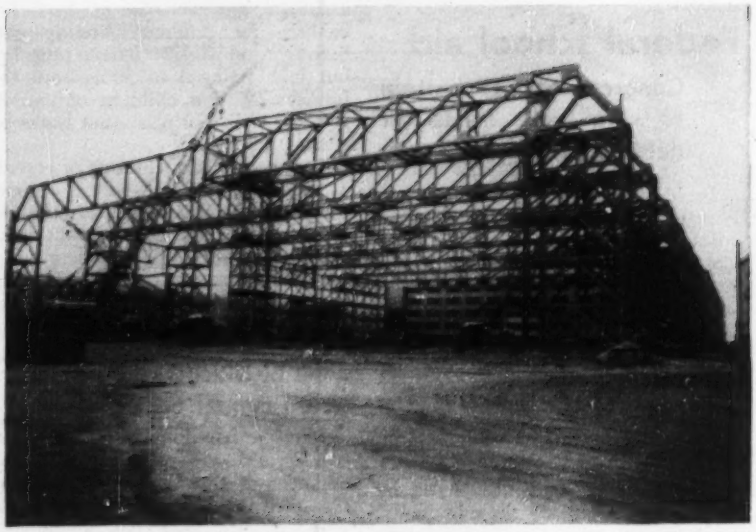
The report does not recommend any specific toll road project, but it does take note of recent surveys of two of the state's most congested areas —U. S. 1 between Richmond and Petersburg, and the Virginia suburbs of Washington. Consulting engineers have reported that a $57-million Richmond-Petersburg turnpike would be feasible. But it is held that toll roads are not the solution in the Washington area (ENR Dec. 17, 1953, p. 27).

Expressway commission named in Wisconsin

Wisconsin's Gov. Walter Kohler has picked the five men who will form the new Milwaukee County Expressway Commission.

Those named, for one to five year terms, are: Robert C. Johnson, president of the Siesel Construction Co.; Robert S. Stevenson, executive vice-president of the Allis-Chalmers Manufacturing Co.; Charles E. Kohlehepp, president of the Wisconsin Public Service Corp.; Elliot G. Fitch, president of the Marine National Exchange Bank, and George A. Mayer, former state senator.

The commission was created by recent legislation to handle construction of a proposed 73-mi expressway system in Milwaukee County (ENR Dec. 31, 1953, p. 26).



3-hinged frames set record

Steel trusses erected for a Lockheed Aircraft Corp. factory in Burbank, Calif., have a clear span of 252 ft. They may be the longest of their type in the world.

Hinged at midspan, the trusses are rigidly connected to 24-ft-wide steel towers at their ends, enabling the steel frame to be designed as a three-hinged arch.

The towers, in addition, will provide six stories of useful space. Subassembly shops and offices will be housed in them.

An extension of a nearly identical building erected in 1944, the structure was designed by J. G. Middleton, structural engineer. National Steel & Shipbuilding Corp., of San Diego, Calif., fabricated and erected the structural steel. J. A. McNeil Co., of Los Angeles, is the general contractor.

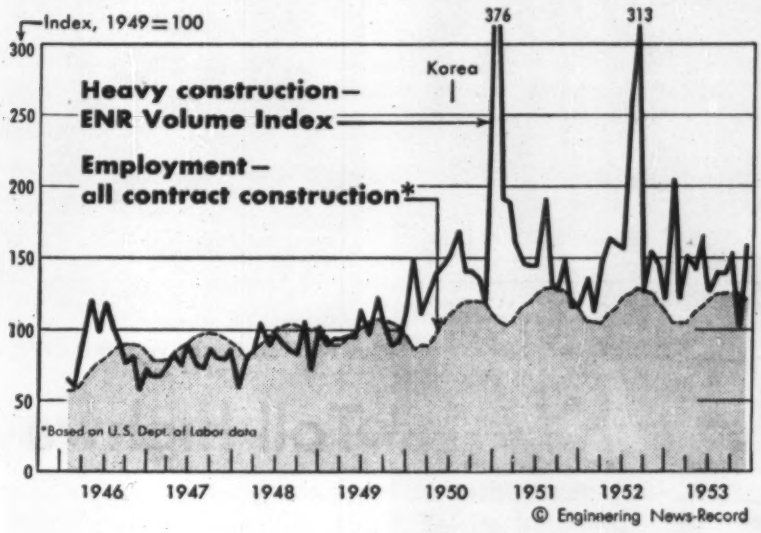
News briefs

- **Power project**—President Frank McLaughlin of Puget Sound Power & Light Co. has filed application with the FPC for a preliminary permit to develop a run-of-the-river dam on the Columbia River at Wells. Army Engineers estimate that this project will cost around $193 million. Soon the company plans to apply for a preliminary permit to develop the Baker River in northwest Washington further at an estimated cost of $12 million.

- **Sawdust trail**—The nickname "Sawdust City" given to the old sawmill town Oshkosh, Wis., seems to have a real meaning. When the rebuilding of a half-mile of the city's Main St. (part of Highway 175), was planned State Highway Department engineers started to see what kind of a job they faced. They found the base of the street had a depth of several feet of sawdust. Now all of the sawdust, in various stages of decay, will have to be dug out and replaced by a more stable material.

- **School building setback**—Further approval of state-aided school construction projects in Pennsylvania has been suspended. Project applications already total several millions more than the $425-million ceiling fixed by the 1953 state legislature. Under a 1951 state law, Pennsylvania school districts have been able to count on up to an average of about 50% in state aid for new schools or additions built by municipal authorities or the State Public School Building Authority. Apparently many school districts which failed to get in under the $425-million ceiling now will have to postpone their projects until at least 1955 (At its '55 session, the legislature is expected to be asked to raise the ceiling to $600 million or more).

- **Fish story**—The U. S. Fish & Wildlife Service has received $15,000 from the Army Engineers for initial work in a program to investigate the potentialities of sound in guiding young fish downstream past Columbia River dams. Construction already is under way on an experimental tank and a sound generator to send out both continuous and pulsating sound waves of frequencies ranging from 20 to 50,000 cycles a second.



Contract construction employment in small downturn near end of '53

Cutback in federal spending between Rockies and Mississippi said cause of non-building labor drop

Employment on contract construction during 1953—biggest in history for work put in place and second biggest for contracts awarded—was close to the high levels of 1951 and 1952. But, during September, October and November, 1953 showed a downturn of about 1% in employment. The reduction was in the non-building fields—with the exception of booming road building—and was probably attributable to cuts in federal contract awards which occurred early in 1953.

Early estimates show November total employment in contract construction to have been 2,611,000, about 1% under November, 1952. For a breakdown by types of construction, it was necessary to go back to October figures of the Bureau of Labor Statistics. Total employment in October 1953, was 2,723,000, about equal to that of the previous year.

Building construction employment for last October—2,163,000—showed no real change from October 1952. There was a 5% drop, however, in non-building construction, with the exception of highway building which showed a 3% increase over October 1952.

• **The geography of it**—The probability that the bulk of employment reductions in non-building contract construction resulted from curtailment of federal projects—69% of the 1952 federal award level—is borne out by the BLS's geographical breakdown. Figures for September 1953—latest available—show the greatest drop in non-building employment to have been in the area west of the Mississippi and east of the Rockies—long the stronghold of federal construction projects. In this area, only Iowa showed a higher level of employment last September than it did a year ago.

In the 44 states and the District of Columbia covered by the BLS survey—which accounts for about 95% of total construction employment—15 states showed contract construction employment to have been higher than a year ago; 28 states and the District of Columbia showed a drop, and one state was unchanged.

Here's a breakdown by areas:

• New England—Employment was up in Vermont and New Hampshire, down in Massachusetts, Connecticut.

• Middle Atlantic—New York showed a sizable increase in construction employment and Pennsylvania a slight one. There was a small slump in New Jersey and Maryland and a bigger one in District of Columbia.

• The South—Three states, Georgia, Florida and Tennessee were up. There was a decline in construction employment in the other southern states, Virginia, West Virginia, North and South Carolina, Alabama and Louisiana.

• The Midwest—Ohio employment soared, thanks to Atomic Energy Commission work. Declines were observed in Illinois, Indiana and Wisconsin.

• The West—The brightest picture in the nation was in the West, where all of the coastal states, and Arizona, Idaho and Nevada showed consistently higher construction employment figures than a year ago. Utah was the only western state in which employment fell off.

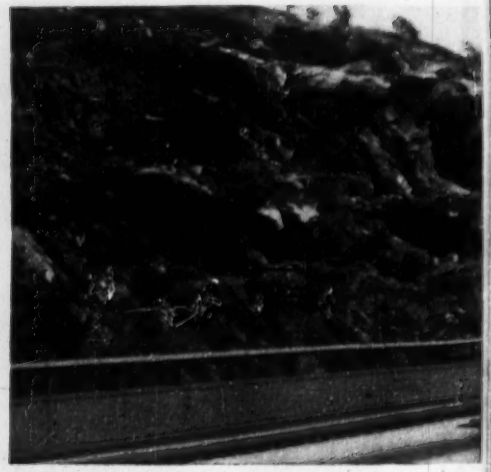
Labor briefs . . .

• **Contest for apprentices**—A national apprentice competition sponsored by the AFL bricklayers, masons and plasterers international union will be held in Los Angeles April 1 to 6. Finals for cash prizes will be held later during the spring in the same city, at the Union Industries Exposition. Brickmason apprentices selected to compete in the finals will be state and local champions, weeded out from among about 7,000 eligible contestants. Registered apprentices from every state may participate if they have not completed more than two years of their training by April 1. The annual competition is designed to raise standards of training as well as to honor outstanding brickmason apprentices.

• **Making plans in advance**—Building tradesmen affiliated with the AFL in the Chicago area will endeavor to obtain wage increases averaging 15 cents an hour. The Cook County Building Trades Council—representing 125,000 workers—has notified various municipalities so that budgets for the coming year will provide for the possibility of the unions' obtaining their demands. But the Builders' Association of Chicago takes the view that the industry can't stand further increases, and that an increase in building labor costs will reduce the volume of construction.

• **Open door policy**—Opening of a new unit of the Lincoln-Garfield School in New Castle, Pa., was delayed for a month while the glaziers' union and the carpenters' union tried to settle the problem as to which group should hang the doors. Meanwhile, the doors were piled in a corner of the new building. Pupils are scheduled to occupy the building shortly after the first of the year.

SECTIONS OF NEW YORK STATE'S THRUWAY have been completed and are now in service as free roads until enough length is open to justify toll collection. This section is near Canastota in the central part of the state.



APPROACHING NEW YORK CITY, the

Toll highway

V. T. Boughton
Associate Editor

The year 1954 promises to set an all-time high in toll-road construction. In the year just opening, nine projects having a total length of nearly 1,100 miles and costing one and one-half billion dollars will be actively under construction. Also, it now appears probable that starts will be made on six other projects having a total length of over 500 miles and costing close to one billion dollars.

The end result will be the addition of 1,600 miles of modern highway to the nation's basic highway system in areas where better roads are badly needed. That is highly desirable, and the fact that this additional mileage has been attained much more quickly than it could have been by normal highway-financing methods doubtless is more significant than is the fact that the cost will be considerably above the cost of like facilities built without resort to toll financing.

Actually, if construction costs continue to rise, the cost of the toll highways built today may be no more than the same project would cost three or four years from now when it could have been built as a part of the regular federal-aid road program.

Despite these favorable aspects of toll financing as a means for expanding the nation's highway building program, there are unfavorable trends that need to be recognized and checked, if possible, in the new federal-aid highway act that will be written this year. These are the continued lack of interstate planning for toll highways and the perpetuation of toll collection on those highways

New Jersey Turnpike has six lanes for much of its length. Other sections are to be widened to six lanes within the next year or two.

construction to reach peak in 1954

long after the time when they should be freed of tolls.

• **Toll mileage mounts**—It is just 15 years since work started on this country's first modern general service toll highway, the original 160-mile Pennsylvania Turnpike. That facility went into service late in 1940, having been built at a cost of about $72 million. It operated in or close to the red during the war years, but with the great upsurge of motor-vehicle traffic that followed World War II its income rose in a spectacular way and set highway authorities in other regions to thinking about meeting their expanding needs by toll financing.

As a result, there are in service today 840 miles of toll highways and parkways costing $674 million. Much of the 1,081 miles now under construction will be in service by the end of this year and all of it is to be in service before the end of 1955, bringing the total mileage in service at that time to 1,921.

Much more mileage is in various stages of planning, as will be seen by the accompanying tables and map.

The table of "Authorized Toll Roads" includes all toll roads other than those actually under construction that have been the subject of legislative action. Some have full legislative authority to start as soon as financing can be arranged. Others need additional legislative approval before construction can start. A few are private undertakings for which state charters have been issued.

Despite the fact that each project in this table has been advanced to the point of receiving some legislative consideration, a few of the projects have little chance of ever being built.

Rounding out the picture of toll-road planning in this country is the table of "Other Projected Toll Roads." That one is made up of projects that have not reached the stage of legislative action but have been considered or are now being studied by some responsible agency such as a state highway department, a turnpike authority or a legislative committee. Here again, some of the listed projects probably never will go beyond the planning stage.

• **How much work ahead**—Any estimate made today of the length of toll highways that will be built in the years immediately ahead could be materially affected by governmental actions. For

Toll Roads not the answer

ONE SIGNIFICANT FACT stands out in this survey of toll road developments. It is that construction of toll highways is not the answer to this country's highway problem. The answer must lie in an expanded program of construction of free highways.

Toll financing has made it possible to meet a few of the nation's most critical needs for highways and major bridges. It can be expected to help in a few more areas. But even if all of the toll highway projects now under study can be financed by that means—which is highly improbable—the total mileage built in that way still would be only a fraction of this country's urgent highway requirements.

That hard fact needs to be recognized in Congress and by the legislature of each state. Unless it is recognized, and unless steps are taken now to increase greatly the amount of money that is available to state highway departments and city public-works departments for construction or reconstruction of highways and through streets, congestion on highways and streets will grow progressively worse instead of better.

Toll financing cannot possibly solve their most critical problems. Hence postponing action on a large increase in the normal highway and street building program in the vain hope that an answer will be found in toll roads would be a grave mistake.

Toll roads:

At least one thousand miles of the toll projects still under study have good prospects for being built

example, a decision by Congress to grant some federal aid to toll roads, as has been proposed, would increase the mileage very considerably. Similarly, refusal by Congress to make the material increase in federal aid for free roads proposed by the American Association of State Highway officials would almost certainly stimulate toll road planning.

Excluding these possibilities for the moment, it can be said with assurance that about 1,000 miles of the 5,200 miles of proposed toll roads in the accompanying tables have good prospects and that the prospects for the remainder range from fair to poor.

In other words, the toll highways now in service plus the ones under construction or rapidly approaching the construction stage represent the cream of the projects that can be financed as toll roads without some form of subsidy. Unless some form of subsidy is applied, the total of toll roads to be built in this country will not go far above three or four thousand miles.

Use of subsidies could, however, increase the mileage of new toll-road construction. One form of subsidy, as noted previously, would be federal aid. Another would be use of the income from a toll highway that is producing a return well above that needed for operating costs and bond retirement to finance extensions that could not be financed on their own revenue-producing ability.

A good example of growth through toll-road extensions can be found in the link now being built by the New Jersey Turnpike Authority between the New Jersey Turnpike at Newark Airport and the Holland Tunnel in Jersey City. Strong political pressure was brought on the authority to build that link as part of its original undertaking, but the cost, then estimated

TABLE I—SUMMARY OF TOLL ROADS

	Length, miles	Cost
Toll Roads in Service	840	$ 674,000,000
Toll Roads under Construction	1,081	1,497,000,000
Authorized Toll Roads	3,056	3,573,000,000
Other Projected Toll Roads	1,927	2,075,000,000
	6,904	$7,819,000,000

TABLE II—TOLL ROADS IN SERVICE

Name	Length, miles	Cost
Overseas Highway (to Key West, Fla.)	122	$ 8,500,000
Pennsylvania Turnpike	327	240,750,000
Westchester County (N. Y.) Parkways	25	25,000,000
Merritt and Wilbur Cross Parkways in Connecticut	67	38,000,000
Maine Turnpike	44	20,600,000
Buccaneer Trail, Florida	17	4,600,000
New Hampshire Turnpike	15	7,500,000
New Jersey Turnpike	118	285,000,000
Denver-Boulder Turnpike	17	6,000,000
Turner Turnpike (Oklahoma)	88	38,000,000
	840	$673,950,000

TABLE III—TOLL ROADS UNDER CONSTRUCTION

Name	Length, miles	Cost
Maine Turnpike Extension	66	$ 55,000,000
New Hampshire, Massachusetts line to Concord	40	26,000,000
New York State Thruway	427	500,000,000
Southern State Parkway, New York	13	40,000,000*
New Jersey Turnpike, Hudson County Ext.	8	104,000,000
Garden State Parkway, New Jersey	165	285,000,000
Pennsylvania Turnpike, Delaware River Ext.	33	65,000,000
Ohio Turnpike	241	326,000,000
West Virginia Turnpike	88	96,000,000
	1,081	$1,497,000,000

* Cost of widening only

Other tables on following pages

at about $90 million, was so great as to cast doubt on the economic justification for the entire project if it had to be included. So it was not included.

Now that the income from the turnpike that was built has far exceeded expectations, the Turnpike Authority finds itself in a position where it can give the populous communities of Jersey City and Bayonne the better connections with the main stem of the turnpike that they badly need.

Similarly, in other states having turnpike commissions or authorities, the government can be expected to look to those agencies to build extensions to serve areas needing better highway facilities to the extent that the less profitable extensions do not make too heavy a drain on the agency's current source of income, especially if the extensions offer fair prospects for developing new business for the original project.

Maine's northern extension of its turnpike falls into this class, also the northeastern and northwestern extensions of the Pennsylvania Turnpike.

Turnpike authorities will be receptive to such a plan since construction of new facilities will make life much more interesting for them and will postpone the day when they have to shut up shop because all their bonds have been paid off.

From the viewpoint of state legislatures, every dollar that can be obtained from private sources to extend existing toll highways will mean a dollar of regular highway income released to match federal aid for highway building in some other part of the state. Hence state legislatures can be expected to favor extensions.

• **Perpetuation of tolls**—There is, however, a real danger in the possibility that the end result of this trend will be perpetuation of tolls on many highways long after the bonds issued to build them have been paid off.

Connecticut already has perpetuated toll collection on its existing toll parkways and on the proposed Greenwich-Killingly Expressway. Last year the legislature specifically authorized continuation of toll collections after bonds issued to build those projects have been paid off.

Hence it is apparent that there is nothing synthetic about the concern of many highway officials over the possibility that this country is going to have toll highways for many more years than is indicated by the bond retirement schedules of the toll roads built or soon to be built.

• **Federal aid for toll roads**—That possibility of the indefinite continuation of tolls is why some students of national highway policy have given thought to the use of federal aid to toll highway projects as a means for bringing toll highways within the scope of federal control.

Congress could refuse to grant federal aid to states that continue to supplement their road-building funds by continuing tolls after bonds have been paid off just as it now refuses to grant federal aid to any state that increases its diversions of gas-tax income to other than highway purposes.

Or Congress might take a more positive step such as authorizing the use of federal aid funds to pay part of the cost of building toll highways, as has been proposed by some of those who advocate the construction of more toll roads as a means for meeting the nation's growing need for main highways. Congress then could specify that collection of tolls should not be continued on highways built with such federal aid after the bonds issued to supplement the federal funds had been paid off.

Obviously, such a plan would have the effect of increasing the mileage of toll roads built as it would reduce the amount of money to be raised by bond issues. That would reduce the amount of income needed from tolls and so would make it possible to finance projects that now cannot show enough potential income to be attractive to banking houses.

• **Lack of interstate planning**—A change of this kind in federal highway policy would also have an advantage in that it would bring toll road plan-

(*Continued on page 32*)

Toll roads:

A change in Congressional policy toward toll roads is possible. It could increase new construction materially

ning within control of the U. S. Bureau of Public Roads. Heretofore the bureau has been able to exercise no control over that planning as no federal aid could be used for toll roads.

Each toll highway built to date was planned primarily to meet a local need, and each was laid out to be certain that it attracted enough traffic to insure a return on the investment.

Regional needs were of secondary importance. In most instances, decisions as to where the toll turnpike in one state was to stop at the border of an adjoining state were made on the basis of expediency rather than sound regional highway planning.

The best example of this is found in the area between Pittsburgh and Chicago. Extension of the Pennsylvania Turnpike to the Ohio line was started before the commission that now is building a toll highway across Ohio had been created. Similarly, Ohio did its planning before the Indiana Commission was set up, and now Indiana is starting to build its turnpike before the commisison just set up in Illinois has had any chance to determine whether it should build any toll highways, and if so, what point would be best for a connection with the Indiana Turnpike.

The individual state highway departments cannot be blamed for this situation because, generally, they had neither the money nor the authority for the planning studies that were required, and in most instances, as soon as the state legislature decided to build a toll turnpike, planning was vested in a new commission or turnpike authority.

Also, no one foresaw how extensive toll-road development was to be following the end of World War II.

Little can be done now to correct the mistakes that have been made, but if Congress takes any action that would materially increase the mileage of toll roads built in future years, provision also could be made for fitting those projects into the basic interstate system of highways.

• **Active discussion due**—That federal aid for toll highways will come up for active discussion when the current session of Congress starts to write a new federal-aid highway act is obvious. Senator Edward Martin of Pennsylvania, chairman of the Senate Public Works Committee, is an outspoken advocate of toll highways as a means of meeting the nation's highway needs. However, he also is an advocate of withdrawal of the federal government from the field of gasoline taxation, so he may not favor federal aid for toll highways.

Senator Francis Case of South Dakota, chairman of the Senate's Public Works Subcommittee on Roads, is strongly in favor of federal aid for toll roads, under careful control. He also favors a large increase in federal aid to the states. If his thinking should prevail, the states would all get much more federal aid in the years immediately ahead and so would have large amounts that they might not be able to match easily with income from their own gas taxes. These funds could be used to supplement capital from private sources for toll

(Continued on page 35)

TABLE IV—AUTHORIZED TOLL ROADS

(Projects that have received partial or full legislative approval if financing can be arranged.)

Location	Length, miles	Estimated cost[1]
New Hampshire—Portsmouth to Rochester	20	$ 14,000,000
Massachusetts East-West Toll Road	123	200,000,000
Connecticut—Greenwich-Killingly Expressway	130	213,000,000
New York Thruway Extensions		
Buffalo to Pennsylvania line	67	60,000,000
Massachusetts Connection	22	30,000,000
New England Thruway	14	40,000,000
New Jersey Turnpike Connection	5	10,000,000
New Jersey Turnpike Extensions		
New York Thruway Connection	19	50,000,000
Pennsylvania Turnpike Connection	6	25,000,000
Widening 60 miles from 4 to 6 lanes		20,000,000
New Jersey East-West Turnpike	55	300,000,000
Pennsylvania Turnpike Extensions		
New Jersey Turnpike Connection	2	20,000,000
Northeast Extension	140	250,000,000
Lateral East-West Connection	100	170,000,000
Northwest Ext. and Erie County Link	185	300,000,000
Gettysburg Extension	30	50,000,000
Indiana—Ohio to Illinois line	156	280,000,000
Wisconsin—Illinois line to Minnesota line	250	200,000,000
Virginia—West Va. line to N. C. line[2]	75	90,000,000
Richmond to Petersburg[3]	41	52,000,000
Virginia and North Carolina, Coastal Turnpike[4]	54	5,000,000
North Carolina—Mount Airy to S. C. line	125	200,000,000
Georgia—Cartersville to Tennessee line[5]	65	52,000,000
Florida—Ft. Pierce to Hollywood	110	62,000,000
Kentucky—Louisville to Elizabethtown	45	35,000,000
Kansas—Kansas City to Topeka	55	60,000,000
Oklahoma—Tulsa to Missouri line	86	40,000,000
Oklahoma City to Kansas line	96	50,000,000
Oklahoma City to Texas line	128	65,000,000
Texas—Dallas to Ft. Worth	32	30,000,000
Dallas-Ft. Worth to San Antonio[6]	250	185,000,000
Okla. line to Houston and Corpus Christi[6]	500	215,000,000
Washington, Tacoma to Everett	70	200,000,000
	3,056	$3,573,000,000

Footnotes:

1. Most of these estimates are unofficial.
2. A private corporation chartered in 1951 to build this road.
3. A private corporation chartered in 1951 to build this road. It also is under study by the State Highway Commission.
4. Public agencies were created in 1950 in Virginia and North Carolina to build a toll highway along the cost, but no financing has been arranged.
5. Authorized, but not found economically justified under conditions existing at the time of investigation (1952).
6. Private corporation chartered to build these roads, but after Feb. 26, 1955, the Texas Turnpike Authority may build toll roads to serve the same areas.

Me? Ride to work on wire rope?

That's right. In the course of a year this young lady may travel as much as 150 miles with the aid of wire rope that safely and swiftly whisks her elevator aloft and then just as safely returns it to ground level. It's quite likely that she gets to her job with an assist from Wickwire Rope. Here again—as in so many other fields where wire rope is used—men who manage and maintain the nation's tall buildings have learned to place unbounded faith in the safety and reliability they get from Wickwire Rope.

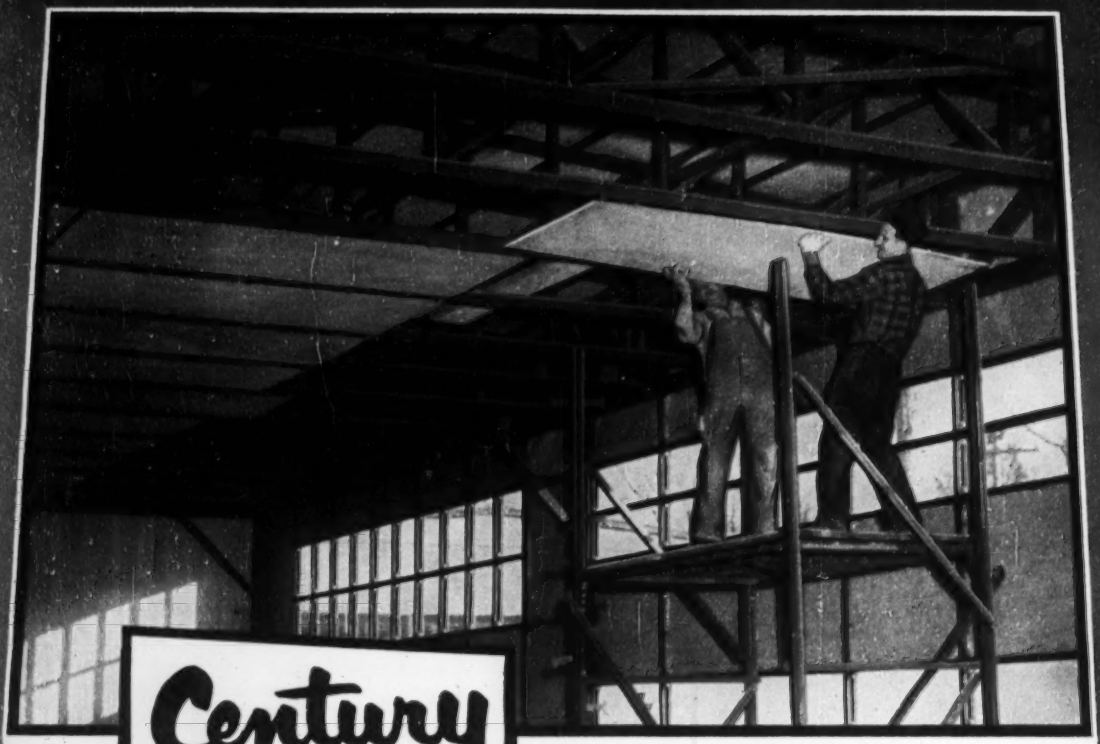
A YELLOW TRIANGLE ON THE REEL IDENTIFIES WICKWIRE ROPE

THE COLORADO FUEL AND IRON CORPORATION—Abilene (Tex.) • Denver
Houston • Odessa (Tex.) • Phoenix • Salt Lake City • Tulsa
PACIFIC COAST DIVISION—Los Angeles • Oakland
Portland • San Francisco • Seattle • Spokane
WICKWIRE SPENCER STEEL DIVISION—Boston • Buffalo • Chattanooga
Chicago • Detroit • Emlenton (Pa.) • New Orleans • New York • Philadelphia

1854

WICKWIRE ROPE

(CF)



Century APAC®

gives you more—much more—for your building dollars

In the picture above "Century" APAC in 3/8" thickness is being secured in steel channels for the ceiling. It is an all-purpose building material made in 4' x 8' sheets from asbestos fiber and portland cement. These practically indestructible materials give APAC many exceptional and desirable qualities.

It cannot burn, rot, or corrode. It is completely resistant to rain, sun, and temperature change. Vermin cannot damage it. Although it takes decorative colors well, you never have to give it a protective coat of paint.

It goes up fast, too! Workmen find the large sheets easy to handle. Special sizes or shapes can be cut on the job . . . no special skills or tools are required. And "Century" APAC has almost no limit to its usefulness: it serves for both exteriors and interiors, walls and ceilings.

Before you give the "go-ahead" on your company's next building project, find out if "Century" APAC couldn't do the job best and at lowest cost! See your K&M distributor for complete information, or write directly to us.

Nature made asbestos...
Keasbey & Mattison has made it serve mankind since 1873

KEASBEY & MATTISON
COMPANY • AMBLER • PENNSYLVANIA

K&M best in asbestos ®

Toll roads:

Interest in privately sponsored toll highway projects is declining

road construction. That could result in a large increase in toll highways.

Where the Bureau of Public Roads will stand on this subject is not known. Traditionally it has been opposed to toll roads in the past. But now it has a new head—Commissioner Francis V. du Pont—and has lost some of its past policy-makers through retirement and death. As a result, uncompromising opposition to toll roads on the part of the Bureau of Public Roads may be a thing of the past. Whatever the bureau's new policy may be, it will have an important bearing on whether toll road building will drop off sharply from the peak it will reach this year or will continue active for several years to come.

• **Private toll projects out**—The possibility that any one of the four privately sponsored toll projects listed in the table of authorized projects ever will be built as a private undertaking appears remote. Some of them, however, probably will be built as public projects. They have been included with the authorized projects because the corporations sponsoring them still have valid charters granting them power to build a toll highway if they can find financial backers.

There is where the pinch comes. Banking houses just are not interested in the bonds of private companies planning to build toll roads. Presumably the bankers realize that if any project is needed badly enough, it will be built ultimately by a public agency.

DEEP ROCK CUTS are characteristic of the West Virginia Turnpike. Cuts and fills are made wide enough for four lanes, but only two lanes are being paved initially.

▸ Work now in progress

New York State, with over 400 miles of its projected 535-mile system of toll thruways in various stages of construction, is far ahead of all the other states in the volume of work being pushed to completion. Some sections of New York's thruway already are in use (tentatively as free roads), and the state hopes to have most of the highway except the big Hudson River crossing ready for service before the end of this year.

• **Work in Ohio pushed**—Ohio, with its 241-mile cross-state toll highway, will stand in second place for volume of work this year. Nearly three-quarters of an estimated $212 million in construction contracts for the project had been let by the end of last year. The remainder will follow early this year. Completion date is set for October, 1955. It could be delayed by a current controversy over the location of one section of the highway.

• **More work in New Jersey**—New Jersey has two toll-road building agencies, the New Jersey Turnpike Authority—which built and now operates the 118-mile New Jersey Turnpike—and the New Jersey Highway Authority—which was set up in 1952 to complete the 165-mile Garden State Parkway as a toll-financed undertaking.

The Highway Authority began letting construction contracts in August, 1952. By the end of 1953 it had about $120-million worth of work under contract, representing 130 miles of parkway.

Two sections of this parkway had been built by the State Highway Department as free roads before the Highway Authority took over. Another section has been opened since then, and the authority expects to have many more miles in service by summer and the whole parkway completed except for minor details by the end of the year.

Later in 1953 initial contracts were let by the New Jersey Turnpike Authority for what will be the most costly toll project yet undertaken, the 8-mile link between the New Jersey

(*Continued on page 36*)

TABLE V—OTHER PROJECTED TOLL ROADS

Location	Length, miles	Estimated cost
Pennsylvania Turnpike		
Connection to West Va. Turnpike	30	$ 50,000,000
Virginia, Washington circumferential highway	20	40,000,000
Florida, Jacksonville to Ft. Pierce	214	95,000,000
Titusville to Clearwater	130	80,000,000
Michigan, Ypsilanti to New Buffalo	176	215,000,000
Ohio line to Detroit and Bay City	102	100,000,000
Ohio, Cincinnati to Penn. line near Conneaut	300	450,000,000
Illinois, Mt. Olive to East St. Louis	40	50,000,000
Indiana line to Mississippi River	160	240,000,000
Indiana line to Wisconsin line	80	160,000,000
Iowa, Davenport to Council Bluffs	280	250,000,000
Kansas, Topeka to Wichita and Okla. border	180	180,000,000
Kentucky, Elizabethtown to Tennessee line	90	80,000,000
Tennessee, Kentucky line to Nashville	45	45,000,000
Louisiana, Lutcher to Lafayette	80	100,000,000
	1,927	$2,075,000,000

Toll roads:

A number of important new toll projects will get under way in 1954

TURNER TURNPIKE in Oklahoma is the most recent toll road to go into service. During the first six months of operation, income exceeded estimates by 19 percent.

Turnpike at Newark Airport and the Holland Tunnel under the Hudson River at New York. That highway is now estimated to cost $104 million, or $13 million a mile.

The first contracts were for work on the substructure of the major element of the project, a long high-level bridge over Newark Bay. Other contracts will be let soon so that a good start can be made on the project in the spring.

Two other projects that will reach their construction peaks this year are the West Virginia Turnpike and the Delaware River Extension of the Pennsylvania Turnpike. The former is through mountainous country involving very heavy grading—deep cuts and many high fills—for much of its 88 miles.

Because of the high cost, only two of the projected four lanes of this highway are being completed and paved this year, with an additional climbing lane on steep grades.

All grading work is well along. Paving contracts have been let, with a start of paving set for April and the highway due to be in service by late summer.

Completion this year also is scheduled for the 33-mile extension of the Pennsylvania Turnpike to the Delaware River between Philadelphia and Trenton where a connection is planned with the New Jersey Turnpike.

• **Work starts in New England**—First contracts have been let on two projects in New England, a 66-mile extension of the Maine Turnpike and a 40-mile turnpike up the Merrimack River valley in New Hampshire from the Massachusetts line to Concord. Both will get under way actively this spring. Somewhat later, work will start on still another toll road in New Hampshire, which in effect will be a 20-mile northerly extension of the present New Hampshire Turnpike. Like the Maine Turnpike, both new highways in New Hampshire are designed primarily for out-of-state summer tourist travel.

▸ Projects to start in 1954

In addition to this second toll road in New Hampshire there are four much larger projects on which some construction is expected to get under way this year. They are the East-West Toll Road in Massachusetts, the Greenwich-Killingly Expressway across Connecticut, the Northeastern Extension of the Pennsylvania Turnpike, and the Indiana Turnpike.

A route for the projected toll highway across Massachusetts from the Boston metropolitan area to the New York State line, where a connection with the New York Thruway system is proposed, has been approved by the Commissioner of Public Works, which clears the way for the Turnpike Commission to make definite plans for financing the work. Meanwhile, engineering work is being pushed in the hope that actual construction can start late this coming spring. That highway will be 123 miles long and cost around $200 million.

The 130-mile toll expressway across Connecticut is designed to provide relief for present overloaded highway along the coast—U. S. Route 1—as far as New London. Two sections, totaling ten miles, already have been built with regular federal-aid highway funds. Last year, as a means for speeding completion, legislation was passed authorizing toll financing. Traffic and cost studies are nearing completion. If they are favorable, financing probably can be arranged in time to start construction of additional sections this year.

Late in 1953 the way was cleared for start of construction on a connection between the New Jersey and Pennsylvania turnpikes. Work on that connection has been held up by a legal obstacle involving construction of a second bridge across the Delaware River in the area served by the existing Burlington-Bristol toll bridge. That structure is entirely inadequate as a link between the two turnpikes.

Work on the link between the two turnpikes will be started as soon as possible because it will be badly needed when the Pennsylvania Turnpike extension to the Delaware River is opened. And as completion of that link will add materially to traffic on the New Jersey Turnpike between Camden and the north end, the New Jersey Turnpike Authority is expected to start soon to construct additional lanes in that area where there are only four lanes at present.

Also in 1953 Governor Fine of Pennsylvania announced that work will start in the near future on the projected Northeastern Extension of the Pennsylvania Turnpike. Its actual location has not been revealed but it is expected to start at some point on the new Delaware River Extension north of Philadelphia and run north to the anthracite coal region.

Still farther west, planning for the 156-mile toll highway across northern Indiana also is in an advanced stage. The Toll Road Commission received a favorable report on potential income late last year and three weeks ago completed financing arrangements. Engineering work has been advanced to the point where some construction contracts could be let soon, now that the bonds have been sold. Cost of this project is put at $280 million.

▸ Projects for the future

A glance at the map and at the tables of authorized and projected toll roads indicates that many more miles of such highways are in some stage of study by responsible agencies—state highway departments, turnpike commissions or legislative committees. It now appears probable that some of the ones in the more populous areas will be built in the relatively near future.

Into that class can be put three of

(*Continued on page 38*)

Don't throw away material!

YOU would agree that minus ½ in. deviation on a 9 in. thickness of material would be pretty good accuracy. That's holding to within 5% of grade but even that accuracy means over 175 cu. yds. of *extra* material in every mile of road. Even holding that close to grade can cost you upwards of $500.00 a mile.

Don't throw dollars into the Hollows! With the Adnun Fluid Level you supplement the amazing accuracy of the Adnun Continuous Course Correction with gauge control so positive that you can take out the dips that won't show under a straight edge. Continuous Course Correction takes out the short hollows and the Fluid Level makes possible the results ordinarily associated with long wheel base design.

The Fluid Level gives you full control from subgrade to finish course. It makes possible the laying of the road to practically an absolute plane with better density, longer road life and less waste of materials.

Don't throw away material. You can figure more closely with the Adnun and the Fluid Level.

Ask about the Adnun Jr. Model 8. Here's a tow-type rig of advanced design that can handle all non-specification work, patch ahead of your big rig and finish off driveways and intersections at low cost.

BLAW-KNOX COMPANY
FOOTE CONSTRUCTION EQUIPMENT DIVISION
1922 State Street,
HUNDA, NEW YORK

Toll roads:

Interest is declining in long toll highways to resort areas of the South and only one is planned in the Far West

the authorized sections of New York's thruway system. They are the New England Thruway, which will link the Greenwich-Killingly Expressway in Connecticut with the expressway system of New York City; the link between the main stem of the thruway and the New Jersey Turnpike; and a link between the thruway and the western end of the toll road across Massachusetts. The latter would require construction of a high-level bridge over the Hudson River south of Albany.

• **Roads to serve the South**—Two years ago when a similar review of the toll-road situation was made by this journal, there was considerable interest in new routes to Florida resort areas. Today, except for the Richmond-Petersburg project and a proposed 45-mile toll highway from Louisville to Elizabethtown in Kentucky on a proposed expressway from the Great Lakes to the Gulf, there is less interest in building sections of any of the major routes as toll facilities.

The 88-mile West Virginia Turnpike, which now is expected to go into service late this year, is on one of those routes. It is through mountainous country and is costing over one million dollars a mile despite economies made in the initial construction. Two years ago, when its construction was assured, plans were being made by a private company, the Old Dominion Turnpike Corp., for a highway that would extend the same route across the even more mountainous western tip of Virginia to the North Carolina line. And in North Carolina, preliminary planning had started on a project to continue the same route across that state to the South Carolina line.

Now, both those projects are shelved waiting to see whether the West Virginia Turnpike turns out to be a paying proposition.

Similarly, in Georgia, where the legislature in 1952 set up a turnpike authority and authorized it to build a 65-mile section of the proposed Lake-Gulf Expressway, interest in toll roads declined when that project was found to be without economic justification.

Within recent weeks there has been some evidence of revived interest in toll highways in Georgia. A bill, said to have the Governor's backing, has been proposed to the legislature to authorize a $225-million cross-state toll highway along the route of the Lake-Gulf Expressway. However, a few weeks earlier the Governor did not go to a conference of governors from states through which that expressway would pass, sending word that he was interested primarily in modernizing main routes across Georgia as free roads.

Tennessee's Governor expressed like views at the conference.

• **Florida project delayed**—Until the early part of November the stage appeared to be all set in Florida for a start on building the first section of a projected toll highway from Jacksonville to Miami. Late in 1952 a favorable income report had been made on that undertaking and a somewhat less favorable report on the projected cross-state route, but because of opposition to the proposed new highway along the east coast from motel owners and some towns on the old highway, the legislature had authorized construction of only 110 miles northward from Miami.

However, the recent death of Governor Dan McCarty put an opponent of the toll highway plans into the governor's chair and now the whole proposal is so deeply involved in politics that no banking house could be expected to take bonds of the new Turnpike Authority until its power to issue bonds is cleared up, which probably will not occur until the legislature meets again in 1955.

• **Midwest toll roads**—Turning now to the Central States, no economic study has been made of the proposed toll-road cutting diagonally across Ohio, so little is known concerning its prospects as an income producer. Much the same can be said about the three toll roads proposed for Illinois. Until the recent change in state administration, no one in authority in Illinois was especially interested in toll roads. Sentiment now has changed somewhat and a toll-road commission has just been set up.

Economic studies are being made for a proposed toll road cutting diagonally across Wisconsin from the Illinois line northwest of Chicago toward the Twin Cities, and for an east-west toll road across Iowa. Prospects for these ventures do not appear bright. They might be improved if Illinois builds the toll highways now proposed for the northern part of the state.

Michigan set up a turnpike authority late last year. It is having economic studies made for a 102-mile toll road north from the state line near Toledo to Detroit and on up to Bay City. As there is a good four-lane highway from Toledo to Detroit, there may be difficulty in showing economic justification for a parallel route on which tolls would be collected.

Michigan also is studying the possibility of building a 176-mile toll highway westerly across the state from the end of the Willow Run Expressway at Ypsilanti to the Indiana line near New Buffalo. Preliminary studies of potential traffic are said to be favorable despite the fact that such a highway would be closely parallel to the Indiana Turnpike.

• **Planning in the Southwest**—The big sprawling toll road net shown on the map in the Kansas-Oklahoma-Texas region actually is not as impressive as it appears at first glance. The only piece actually built is from Oklahoma City to Tulsa, a distance of 88 miles. Construction of the 310 additional miles in Oklahoma has been authorized, if income studies prove to be favorable. But financing these studies has been blocked by the Oklahoma Free Roads Association, which was organized recently to stop the building of more toll roads until more is known about the income and operating costs of the present toll road between Oklahoma City and Tulsa.

In Kansas, a turnpike authority has been set up with power to build a toll highway from Kansas City to Topeka, if cost and traffic studies are favorable. Those studies are expected to be completed by March. The authority also can make studies of the proposed extension to link up with the projected Oklahoma system.

The big mileage of authorized toll roads shown for Texas is made up almost entirely of private projects for which charters have been granted. Since those charters were issued, a turnpike authority has been set up with power to build a toll road from Dallas to Ft. Worth. Also, after Feb. 26, 1955, if the private corporations have not succeeded in financing their projects, this authority may build toll roads to serve any or all areas proposed to be served by the private companies.

• **Little interest in the Far West**—Except for the completed Denver-Boulder Turnpike, there are no toll-road projects in the mountain states or on the Pacific Coast and little interest in them. Only in Washington has toll planning gone far enough to result in definite legislative action. There the powers of the Washington Toll Bridge Authority have been enlarged to permit it to build a road from Tacoma to Everett, about 70 miles, if financing can be arranged.

By any yardstick —

Transmission Life up 100%

Pulling away from the shovel with 50 tons on its back, this 1LLD Euclid heads for the dumpingsite at 25 mph. Thirty of these "Eucs," each with two TORQMATIC DRIVES, hauled more than 1,000,000 yards a month for Western Contracting Corporation on the Fort Randall Dam project.

By any yardstick—miles, hours, ton-miles—truck transmissions *last twice as long* for Western Contracting Corporation since switching from direct-drive trucks to units equipped with Allison TORQMATIC DRIVES.

And "Rip" Collins, Project Manager, gives his TORQMATIC Converter-Transmission teams a major share of the credit for his perfect safety record in 1952: *No time lost due to accidents in 740,000 man-hours worked.*

Western's fleet of 30 Model 1LLD Euclids works 20 hours a day, 6 days a week. Making 700-900 trips per shift on a 3-mile round-trip run, these "Eucs" have hauled 6½-million yards of earth in six months' time. They climb 20% grades with 50 tons on their backs.

The TORQMATIC Converter absorbs harmful shock loads, protects drive lines, transmissions, differentials and other truck components. With no clutch pedal to push and only 3 forward speeds—instead of the usual 7 or 10—drivers quick-shift at full throttle and keep their eyes on the road, not on the gearshift.

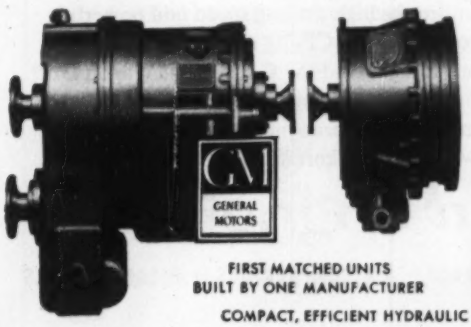
If you are in the earthmoving business, do it better and at less cost with Allison TORQMATIC DRIVES in your units. Ask your equipment dealer, manufacturer or write:

Allison Division of General Motors
Box 894E, Indianapolis 6, Indiana

ALLISON TORQMATIC DRIVES

Unbeatable Team for Maximum Operating Economy

- **Quick-Shifts** at full throttle with finger-tip hydraulic control
- **Holds power to load** at all times—no clutch pedal to push—no gearshift guess
- **Reduces maintenance costs** by absorbing shock—eliminates engine lugging—prolongs equipment life
- **Only** torque converter-transmission team designed to work as a *unit* and built by one manufacturer
- **Cuts** driver training costs



FIRST MATCHED UNITS
BUILT BY ONE MANUFACTURER

Allison

TORQMATIC DRIVES

COMPACT, EFFICIENT HYDRAULIC DRIVES FOR CRANES • TRUCKS • TRACTORS • SCRAPERS • SHOVELS • DRILLING RIGS

Pave the way

FOR GREATER ECONOMY WITH

CP SINKER DRILLS

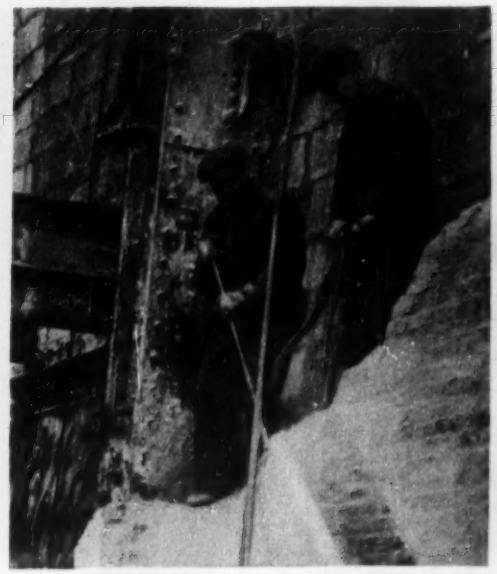
Whatever your drilling need, whether it be for a lightweight CP-22 (28 lb.) or the extra heavy duty CP-50N (102 lb.) you'll get the same rugged performance on every type of dry or wet drilling. Valve design conserves air and maintains maximum drill efficiency . . . full cushioning reduces maintenance.

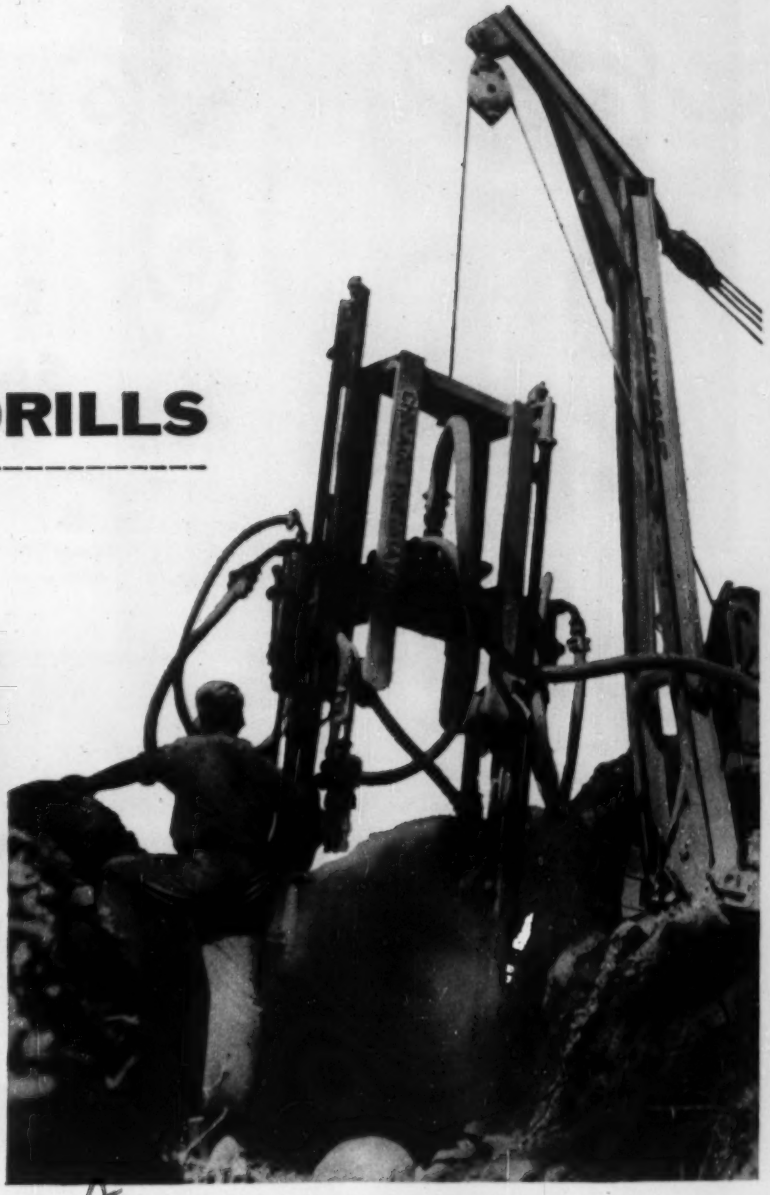
G-300 WAGON DRILL

Affords fast, accurate drilling from any angle. Tubular chassis and drill carriage assure maximum stability and strength with no added weight. Enables the operator to utilize the high drilling speed and powerful rotation of the CP-70-NDC Drifter to best advantage. And the G-150 light Wagon Drill for drilling holes to 20 feet provides an even more maneuverable unit when combined with heavy sinkers and light weight drifters.

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS

CP ROCK DRILLS





CP DEMOLITION TOOLS

Really pave the way for demolition economy! Their smooth running and throttling action makes them easy to handle and hold where footing is hazardous. Capacities range from the CP-111 (25 lb. class) to the CP-117 (80 lb. class).

GTD-300 TRENCHDRIL

Suspended from a tractor boom, the mobile GTD-300 handles six foot steel changes easily. Maximum penetration is obtained by the combination of powerful feed, strong rotation, and the constant air blast which gets you quickly through the dirt capping to solid rock . . . keeps holes free of overburden.

Chicago Pneumatic *8 East 44th Street, New York 17, N. Y.*

DIESEL ENGINES • ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

GRAHAM, ANDERSON, PROBST & WHITE, ARCHITECTS • SHERMAN OLSON, INC., CONTRACTOR • RAND McNALLY BLDG., CHICAGO

how Ceco 1-SOURCE SERVICE SAVES TIME • LABOR • MONEY

■ The cost of any structure depends partly on the way materials are handled on the job.

Here Ceco 1-Source Service offers special advantages to the architect-engineer-contractor team in helping make paper savings truly realistic by integrated delivery.

One responsibility for providing concrete joist steelform service and reinforcing steel, for delivering steel joists, roof deck and metal lath, assures their arrival on the job-site as desired by the architect, just as needed by the contractor. And when there are requirements for Ceco metal windows, screens, and hollow metal doors, these products also are scheduled for arrival when needed. Result: Costly storage is avoided, material handling reduced—and work goes ahead faster.

Look at any job where multiple Ceco Products are used and you'll see neat "ground keeping," a significant sign of low material handling costs. That's just one example of how Ceco 1-Source Service can save for you. If you consult our people in the preplanning stage, product specialists will assist you in the application of Ceco Products so you can realize further savings.

CECO GIVES YOU MORE IN 5 4

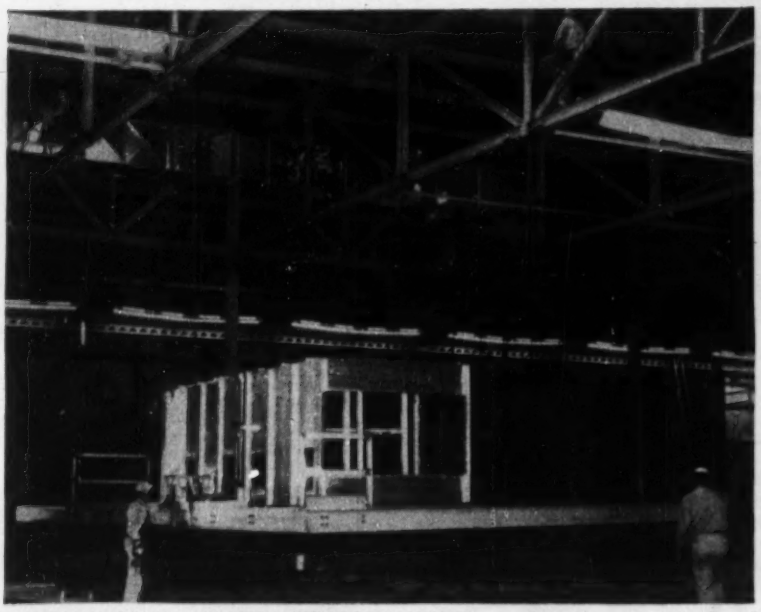
In construction products
CECO ENGINEERING
makes the big difference

CECO STEEL PRODUCTS CORPORATION

Offices, warehouses and fabricating plants in principal cities.

General Offices: 5601 W. 26th St., Chicago 50, Illinois

AIR-CONDITIONING PLANT, at Decatur, Ala., consists of an office section and 640x240 ft of manufacturing floor area. Exterior walls are corrugated asbestos-cement.



PRE-ASSEMBLED AIR-CONDITIONING UNITS, on platforms, were raised and bolted to standardized, welded roof trusses. Clear height under trusses is 24 ft.

INSIDE OF EXTERIOR WALL and roof is a wood-fiber concrete board.

Prefab units hasten plant completion

A $3½-million manufacturing plant in Decatur, Ala., reached 95% completion in 123 working days through the use of precast and prefabricated sections. The plant will produce air-conditioning units.

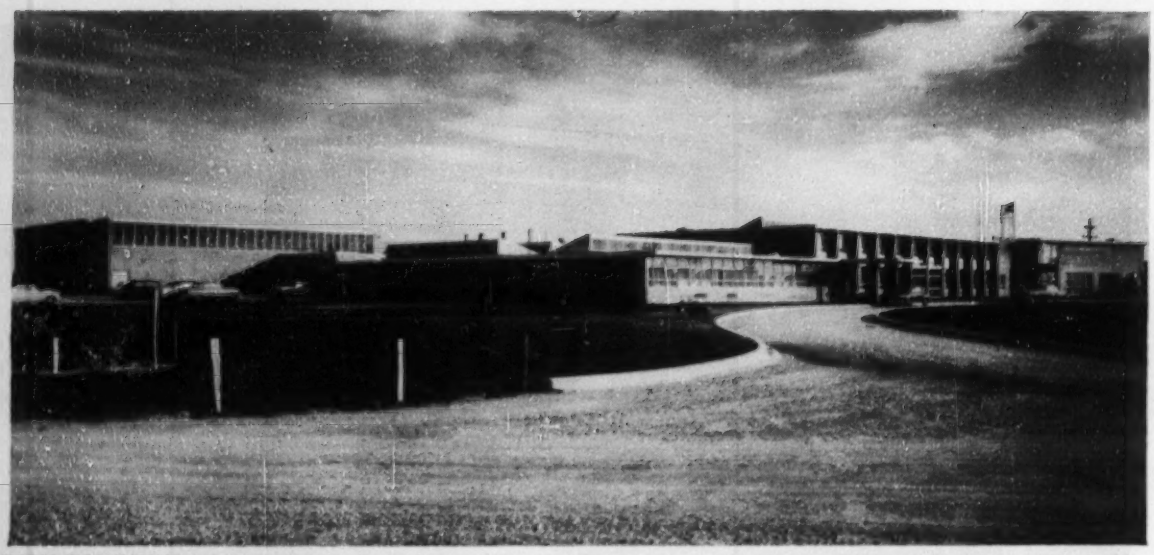
Exterior walls of the plant are corrugated asbestos-cement sheets backed up with 2-in. wood-fiber concrete boards, except for the rear of the plant where tilt-up concrete panels were used. The concrete panels were cast in stacks with a parting agent of floor wax. These panels are removable for future plant expansion.

Exterior walls of the office section (in front of the plant) are aluminum panels above a brick dado and continuous strip windows.

Large open floor space is attained by the use of standardized 80 and 40-ft welded trusses.

Air-conditioning units were preassembled on platforms, which were raised into position and bolted between the roof trusses. The roof-deck is formed of 3-in. thick wood-fiber concrete boards.

The building was designed and built by The Austin Co., Cleveland, Ohio, for the Worthington Air Conditioning Corp., whose main offices are in New York.



RICH TOWNSHIP HIGH SCHOOL, in Park Forest, Ill., is a highly integrated facility for 750 to 900 students. The building features such special provisions as a small theater, a broadcasting and music room, classroom TV outlets, a club room and a soda bar.

High school presents a variety of features

Dedicated this month, the Rich Township High School in Park Forest, Ill., presents an unusual array of student facilities and structural features. The $1.6-million project, with 90,000 sq ft of floor space, is designed for 750 to 900 students, with provisions for a later expansion to accommodate a future enrollment of 1,500.

The building is roughly in the shape of an angular, inverted "S" with the gymnasium at one end and a large auditorium at the other; classrooms, laboratories, workshops, and library lie between. About half of the structure is two-storied, the rest of it, including the gymnasium wing, is one story.

One important aspect of the school is that each room is designed for a specific use. There is an acoustically designed music and broadcasting room, a small stage in a room that can be made smaller with sliding partitions, a home-making suite, club room and soda bar, science and industrial arts laboratories, teachers' lounge, arts and crafts studio, library, auditorium and social hall, medical offices, and TV outlets in most classrooms. The auditorium doubles as a cafeteria and, when the stage facilities are in use, can seat 500 persons. One side of the auditorium is formed by a window wall overlooking a terrace and the inner court.

Basic structural frame of the building is of reinforced concrete for floor slabs, beams, and columns. All floors, with the exception of those in bathrooms, locker rooms and gymnasium, are covered with asphalt tile. The roof is formed of a 2-in. gypsum slab poured on gypsum boards supported by open-web steel joists. The gypsum board form remains in place as an integral part of the roof. A built-up bituminous roofing with slag surface is used on top of the gypsum slab.

A liberal use of plastic domes in the roof aids in daylighting the library, corridors, and laboratories. Interior walls, for the most part, are of painted concrete block which is laid up with a 2-in. air space behind the finished brick exterior.

The industrial arts shop is factory-type steel-frame construction with a skylighted sawtooth roof, while the roof of the shop area is a metal deck with perforated ceiling pans containing a layer of glass fiber for acoustical treatment.

For the gymnasium, 105-ft-span steel rigid frames support channel-section roof deck slabs of precast concrete. The frames give a clear height of 24 ft over a 100x100-ft playing floor. At one end of the big room, floor to ceiling glass blocks provide daylighting. Bleachers that can seat 1,500 people fold away to increase the playing floor space. The ceiling is treated with cane-fiber insulation.

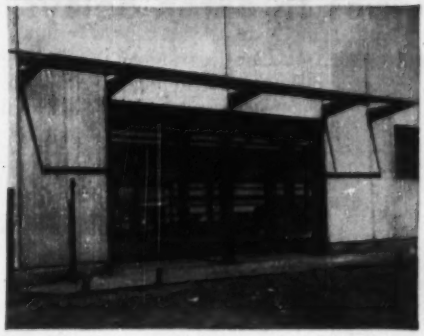
The school was built on its 55-acre tract in one year by the contractors, Chell and Anderson, Chicago, Ill. Architects were Loebl, Schlossman & Bennett; structural engineers, Alfred Benesch & Associates; and mechanical engineers, Samuel R. Lewis & Associates, all of Chicago, Ill.

Photos by Klein

HOME-MAKING SUITE is one of the special features in the new building.

Weather or not...

there's NO loss of time when you use MARIETTA concrete wall panels!



MARIETTA panels are available in a variety of sizes and thicknesses, both solid and insulated. Steel window frames may be cast directly into slabs. Let our Engineering Department show you how MARIETTA panels can solve your industrial construction needs. Literature on request.

Inclement weather, in combination with deadlines, presents the biggest problem to the building industry. We suggest, before you consider hiring a weatherman, investigating the possibilities of MARIETTA precast concrete wall panels.

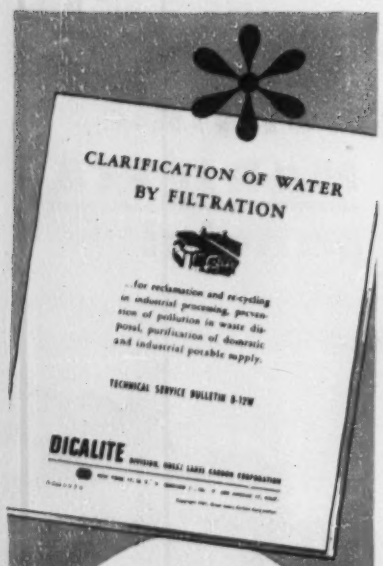
Rain or shine, winter or summer, MARIETTA panels are ideal for industrial construction. Easily erected by bolting directly to steel framework, large areas are quickly closed in with no loss of time in bad weather as would be experienced with the conventional type of masonry curtain wall.

MARIETTA precast concrete wall panels are tongue and grooved for easy edge joining—a strip of cellular rubber insert between vertical and horizontal joints instantly forms a perfect seal. With the novel MARIETTA sandwich construction, two layers of high strength, reinforced concrete separated by a core of rigid insulation, no further insulating is needed for comfortable inside-working conditions in summer and heating costs are greatly reduced in winter. Write today for further information.

THE *Marietta* CONCRETE CORP.
MARIETTA, OHIO

BRANCH OFFICES:
501 Fifth Ave., New York 17, N. Y.
Pulaski Hwy. at Race Rd., Baltimore 21, Md.
805 Bessemer Bldg., Pittsburgh 22, Pa.
Box 1575, Charlotte, N. C.
Hollywood, Florida

PRECAST CONCRETE PRODUCTS FOR FARM, HOME AND INDUSTRY



This FREE Bulletin gives valuable data on water filtration...

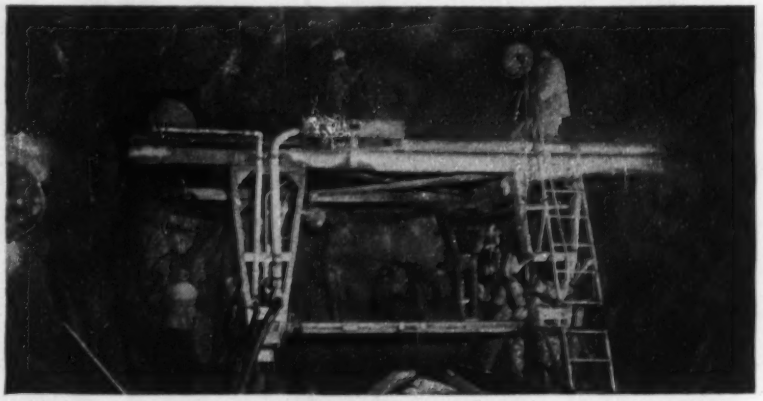
Many problems in the reclamation or recycling of water in industrial processing, in the prevention of pollution in waste disposal and in the purification of potable supply are answered in DICALITE'S BULLETIN B-12-W—"Clarification of Water by Filtration."

Dependable
Dicalite®
DIATOMACEOUS MATERIALS

Write for your free copy.

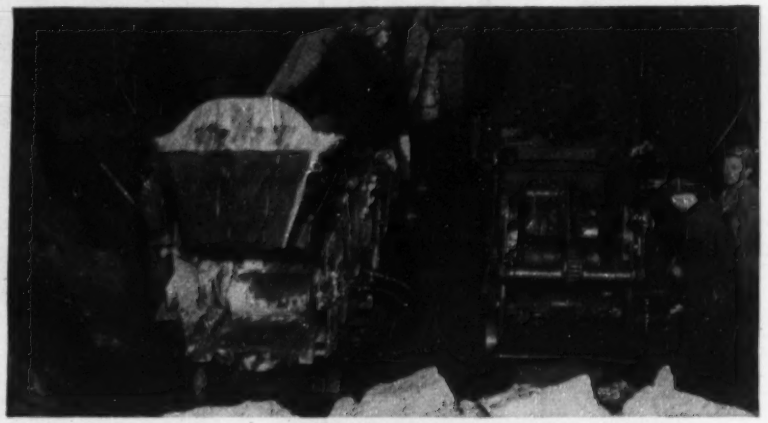
DICALITE DIVISION
GREAT LAKES CARBON CORPORATION
Dept. E, 614 S. Flower Street
Los Angeles 17, California

INTERNATIONAL



ROCK DRILLERS use light scaffold on full-face work for the 14-ft dia, 3-mile long Guthega-Munyang hydro tunnel in Australia's Snowy Mountains.

Australia pushes Snowy Mts. scheme



ROCKER-ARM LOADERS work in tandem for mucking out in the Guthega tunnel.

. . . as cost inquiries threaten delays

INTAKE PORTAL at Guthega Pond widens, dwarfing cars used in mucking.

Construction of the Guthega Pond hydroelectric project in the mountainous southeast corner of Australia—first section of the vast Snowy Mountains program (ENR Feb 5, 1953 p. 58)—is scheduled for completion in April, 1954.

Guthega Pond is one of the smallest parts of the inte[illegible] scheme that will reverse the flo[illegible] of the Snowy Mountains watershed from the already well-watered coast lands to the relatively arid inland areas to the west of the Great Dividing Range in New South Wales.

The Guthega Pond project involves a dam at the junction of the Guthega and Snowy rivers, the 3-mi, 14-ft dia tunnel to the junction of the Munyang and the Snowy rivers, and the

Munyang power station. The tunnel is unlined for most of its length, and recently concreting on the end portions of the tunnel has been started.

Overall, the Snowy Mountains plan will comprise 7 major dams, 86 miles of tunnels, 490 miles of aqueducts, and 16 power plants, plus all the necessary ancillary works for such a vast enterprise.

Started in 1949 with field investigations and engineering surveys, the whole Snowy Mountains scheme originally was envisaged as having a total cost of $450 million. Since then the estimate has jumped to $1.2 billion, and the states of New South Wales and Victoria, chief beneficiaries of the plan, have insisted on a full investigation of the costs.

Contracts on major parts of the project should be let early this year, but the cost investigations may delay them. Immediately at stake in construction work are contracts on the 21-ft dia, 14-mile Eucumbene-Tumut Pond tunnel, the Tumut Pond concrete arch dam, and a large underground power station on the upper Tumut River. This work alone will cost more than $100 million.

Mexican river projects near completion

In western Mexico the Tepalcatepec River project — hydroelectric power and irrigation—is scheduled for completion next year. And in eastern Mexico the similar, but much larger, Papaloapan River project (ENR October 9, 1953 p. 34) has undergone some design changes but is now 90% complete.

Under construction since 1947, the Papaloapan River project's two principal dams, Presidente Aleman Dam and the smaller Santo Domingo Dam, will be altered to reduce the project cost estimate from $45 million to $26 million. The site of the Santo Domingo Dam has been changed and its storage capacity will be reduced, thereby lowering its cost. This reduction in storage will be made up in an increased capacity of the Aleman Dam just downstream. The earth-fill Aleman Dam is to have a new spillway design which will reduce the cost of construction.

Known as the TVA of Mexico, the Papaloapan development eventually will provide a number of new cities, farming areas and industries for people from the drouth-stricken La Laguna area of northern Mexico.

In the state of Jalisco, the Tepalcatepec River project consists of three dams: the Canhondo irrigation dam on the Cupatizio River, the Cobano hydro and irrigation dam on the Tepalcatepec, and the Piedras Blancas Dam which also serves as a bridge. The project will irrigate 50,000 acres and generate 120,000 kw when finished.

Economic development planned for Arabia

A large portion of Saudi Arabia's oil revenues are to be earmarked in the near future for an ambitious road, railway, and port construction program. Current Arabian economic development is concentrated in the Jidda-Mecca-Taif area, on the Red Sea, where highway and port facilities are being improved to handle the annual pilgrim influx; in the oil producing centers of Dhahran and the port of Dammam on the Persian Gulf; and in the fertile Azir Province on the Red Sea.

Jidda and Dammam are scheduled for more extensive port improvements, and the two seaports are to be linked with the first trans-Arabian railway. The U. S.'s Technical Cooperation Administration and the U.N.'s Food and Agricultural Organization are mapping irrigation and community development projects in Azir Province that will affect 100,000 acres of land.

Construction of the Damascus (Syria)-Medina railway is also planned with a connecting link to be constructed from Medina to Jidda and Mecca, the western termini of the projected trans-Arabian line.

Also envisaged in the proposals are a fertilizer plant, iron mines, and telephone and radio communications throughout the country.

Colombia announces plans for electrification program

As part of Colombia's national electrification program, the Bolivar Department has announced plans for the construction of a $6-million thermal electric power plant at Cartagena. The 30,000-kw installation will form part of an Atlantic Coast network running from Panama to the Venezuelan border. Three other thermal plants, at Magangue (Bolivar Dept.), Monteria (Cordoba Dept.), and Santa Marta (Magdalena Dept.), are to be built at a cost of $19 million. The Cartagena and Santa Marta plants are scheduled for operation by 1960, with the other two plants following by 1964.

Now CONCRETE and other POROUS MASONRY can be made completely water repellent

Above or below grade masonry

ARMOR COAT

ARMOR COAT prevents above or below grade penetration of water in masonry constructions—such as basements, reservoirs, tunnels, etcetera. In addition to water repellent qualities, it is recommended for beautification of homes, commercial and industrial buildings.

During the war ARMOR COAT was used in waterproofing and decorating below grade military workings in England. Many types of paint were tried. ARMOR COAT was the only paint that combined excellent decorative features with high resistance to such severe water pressures below grade.

Above grade

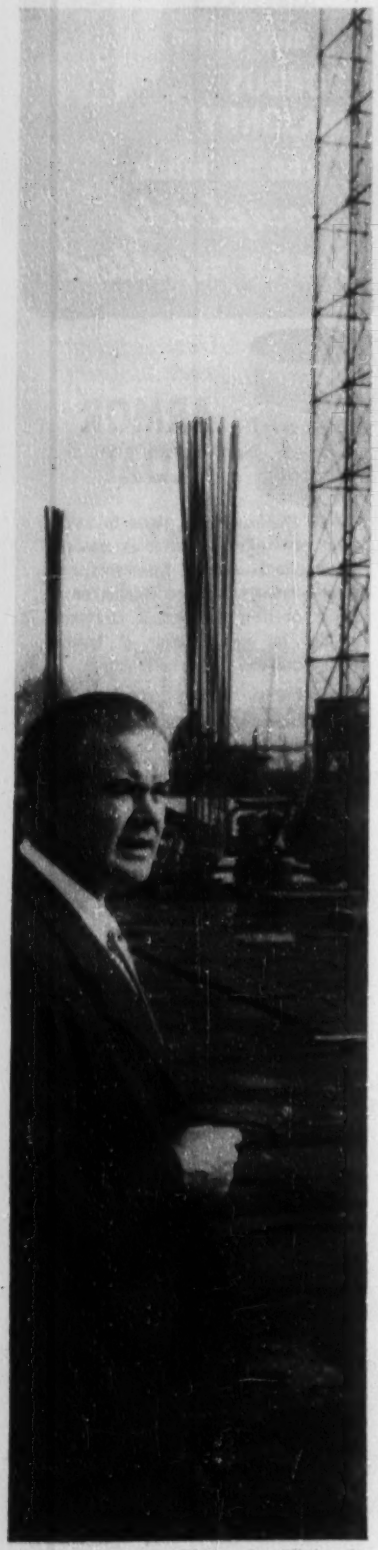
SILINITE

SILINITE is the revolutionary water repellent discovery for use on porous masonry. This clear Silicone base compound gives longlife protection. Concrete, stucco, brick, tile, flagstone and sandstone, new or old, are inexpensively treated with SILINITE and retain their original color and texture. It penetrates, becoming a part of the masonry.

"Proved by years of service throughout the world"

ARMOR LABORATORIES, INC.
Dept. 103
538 Commercial St., Glendale, Calif.
Please send me complete information on how to keep porous masonry "Dry as the Desert."

Name_____
Company_____
Street Address_____
City_____ Zone____ State_____



Photos by Clinkscales

Business executive Daily luncheons served in private dining room permit staff to relax and encourage the exchange of ideas.

Welton Becket: Here's how to run

John Shinn
Pacific Coast Bureau

In discussing the 178-man Los Angeles architectural plant of Welton Becket and Associates, another architect—highly individualistic—whose office consists of himself and a few draftsmen, shook his head disapprovingly.

"Great architecture," he said, "just can't come out of such a factory. A genuinely creative architect simply can't function as a cog in that kind of efficient, market-oriented machine.

"But don't misunderstand me, I'm not discounting the Becket office and others like it. They do a job we can't do. And they're a genuinely American phenomenon—the application to architecture of the American brand of grand-scale corporate methods."

Negative reactions to his kind of operation by fellow architects come as no surprise to Becket. He meets them with a proselyting conviction that the big, multi-service office is inevitable because it is the only kind of an operation that can satisfy many of today's complex architectural needs.

"I know this isn't going to please every architect in the country," Becket told ENGINEERING NEWS-RECORD. "But I think architects have to face it—anyone who expects to compete in quality and in ability to tackle large projects must gear to this kind of operation. The keynote to our growth unquestionably has been the breadth of services we can offer under one roof.

"Maybe I shouldn't say this—but I'm honestly ashamed of the fees we took when we were a two and three-man office."

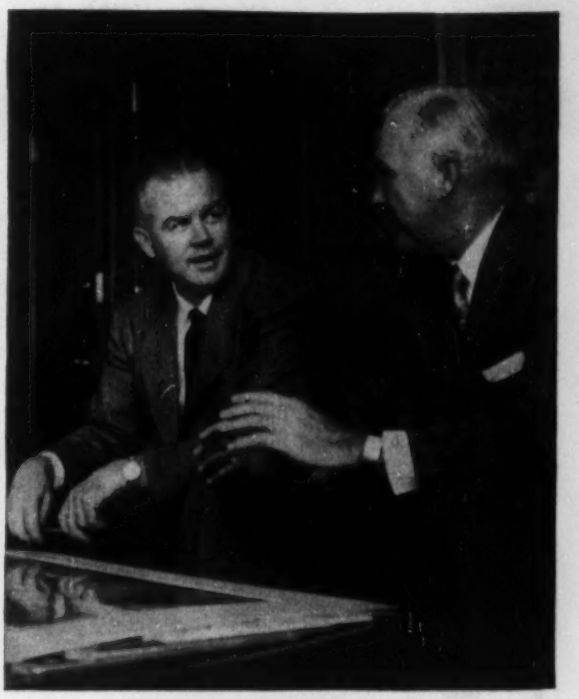
Becket was talking not simply about bigness of staff, but of inclusion in one office of specialists in all the fields involved in a major architectural project—engineers, interior designers, even economists, as well as architects.

It has become inevitable, he thinks, for two reasons: the nature of the present-day architectural job and the nature of the present-day client.

"Building design is more complex today than in the past. Structures are more elaborate, more carefully planned in relation to use and economics. There is more flexibility in design and materials—and consequently a greater need for close working relationships between architects and engineers. There is more relation between the inside and ouside of buildings—the interior design, including decor, often sets the key for the building shell—and consequently a greater need for close working relationships between architects and interior designers."

Today's clients, particularly corporate clients, Becket believes, demand

Designer Projects are shaped in design group sessions. Result is a synthesis of ideas.



Salesman Becket (talking with client) is salesminded, picks architects with both talent and social sense.

total-design plant

the same kind of service from architects they themselves give. They prefer to deal with one office rather than with several. They want the same efficiency they have in their own functioning, and are impatient with the delays that often result when the architect farms out work to other offices.

• **Total design**—What the Becket type of office can offer, that smaller offices can't, are the coordinated services of a small army of specialists. Becket has on his staff eight members of American Institute of Architects and 20 other licensed architects, 24 registered engineers, 3 economists. He has a department that does nothing but store interiors, another only kitchens. The office is prepared for total design —down to the last door handle, work bench—in seven different fields: residential, stores (including shopping centers), hospitals, hotels, public works, commercial and industrial.

No Becket building bears his individual stamp nor anyone's else. It bears the stamp of the office--the coordinated efforts of a number of persons, and in this way is typical of a growing number of architectural-engineering firms.

The basic design concept comes from sessions of the design group, presided over by a director of design and planning, and attended, during the critical stages, by Becket. The design group works from data supplied by the project analysis department, which includes economists able to make complete economic studies. For example, for a client with property under consideration for a shopping center, they will analyze the potential market and the shopping habits of the area, determine whether the center is feasible at all, and if so, what kind and what size of stores should be in it and size of parking space.

When the basic design has been approved, the project is assigned by a production coordinator to one of 12 project architects, specialists in their particular fields. Under each project architect are several job captains, each of whom works exclusively on one job at a time. The project architect functions as a kind of prime contractor, drawing on the services of the various specialized departments—store planning, interior design, kitchen planning, mechanical and electrical engineering, specifications, etc. His draftsmen are assigned from a central pool by the chief draftsman. As the project proceeds, the work is checked frequently by the chief designer and the cost engineer, and the project architect is kept to schedule by the coordinating project architect.

The only service for which Becket has to go outside his shop is structural engineering. In California—an earthquake area—strict registration requirements limit the number of structural engineers, and many find it more profitable to go into business for themselves than to work for architects.

• **Three-way man**—The man who heads such an architectural factory must be a good business executive, a good salesman and a good designer. Welton Becket turns the trick.

In appearance, he is very much the suave, well-tailored, smooth-working business executive. He's a busy one, and moves on a clockwork schedule maintained by a highly efficient secretary. He spends about an eighth of his time away from the office, much of it on long jaunts (He averages about 50,000 miles a year, and during this last November clocked 19,540 air miles that took him to Cairo, London, and Havana). In the office, his time is carefully divided among clients, design and other staff conferences.

On first meeting, Becket appears to be a man of considerable reserve. But on closer acquaintance, he shows warmth and friendliness and an almost boyish enthusiasm for his job and his organization.

Becket is no architectural theorist. If you try to engage him in discussion on the significance of architectural form, on space concepts, on the social implications of architecture, you get little response. They seem not to be things he thinks about. The great architectural revolution of this century is something that he approves and

(Continued on page 50)

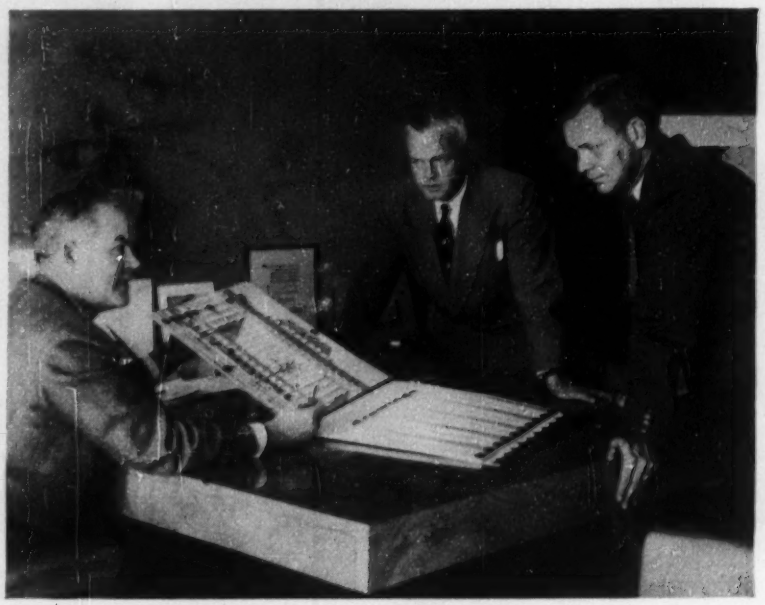
what's NEW in Engineering

An ingenious new alarm system which automatically sounds a warning when overloaded industrial equipment gets too hot, is said to be the answer to the problem of having to feel bearing cases and check thermometers scattered over a wide area. The moment a motor gets "too darn hot", a bulb lights up, and a central monitor gives out an audible alarm.

Texas' newest landmark is the Houdriflow catalytic cracking unit of Texas City Refining, Inc., a spectacular addition to the southwest landscape. The cracking unit, together with visbreaker and vacuum flash tower, were engineered and constructed by Kaiser Engineers Division of Henry J. Kaiser Company from the basic designs prepared by the Houdry Process Corporation. A new-type continuous bulk handling system for fresh catalyst and a new, centralized control system were also designed and built by Kaiser Engineers' process specialists.

To be published January 1, 1954 by McGraw-Hill is the Third Edition of **Formulas for Stress and Strain** by Raymond J. Roark, Professor of Mechanics, University of Wisconsin. This thorough revision of a working handbook for engineers concerned with machine and structural design contains a summary of important formulas, facts and principles pertaining to strength of materials.

An indication of Kaiser Engineers' activity is the fact that more than 6,000,000 miles have been flown by key personnel, staying in touch with far-flung activities in widely diversified engineering fields. When you have a problem in design, engineering or construction, call or write: Kaiser Engineers Division of Henry J. Kaiser Company, Kaiser Building, Oakland 12, California.



BECKET AND CLIENT contact men Kelvin Vanderlip and Jack Beardwood examine presentation book for proposed project.

accepts, but without an obviously accelerated pulse.

Becket says that he has no desire to have buildings he designs recognizable stylistically, as it is possible to recognize a Frank Lloyd Wright, say, or a Le Corbusier. "A building," he says, "should look like the client, not like the architect." If there is a Becket trademark, he would like it to be "a contemporary style that suits the client and expresses the function of the building."

He means "suits the client" in two ways—that the building's appearance should conform with the function the structure is intended to perform and that it should please the client.

When a friend asked him recently what the greatest satisfaction he gets from his work is, he answered promptly: "It's in having a client perfectly satisfied with the building he gets."

It's a real satisfaction to him, and it probably is one key to the kind of product he offers and to his success in marketing it. A Wright or a Le Corbusier probably would concede the paramountcy of the client's needs. But he would have less interest in giving the client something he is satisfied with than something he ought to be satisfied with.

Structurally, he sees the major trend as one toward precast and prefabricated construction generally. The reason is simple: cost. Since forming represents one of the biggest increases in concrete construction costs, the pressure is great to dispense with it.

The present Becket office is the result of steady growth over a period of 20 years. It was established in 1933 as Wurdeman & Becket (Walter Wurdeman was a college classmate of Becket's), became Welton Becket & Associates upon Wurdeman's death in 1949.

• **Small start**—Although the firm's first project was Los Angeles' Pan Pacific Auditorium, which it won in a competition, its major work during the 30's was in residences. There were some exceptions—in 1939, for instance, the office designed several major industrial and public projects in the Philippines. Private residential work came to a stop in 1942, and during the war years the firm did only Navy and other government housing. It has been since the war that the firm has made its greatest growth.

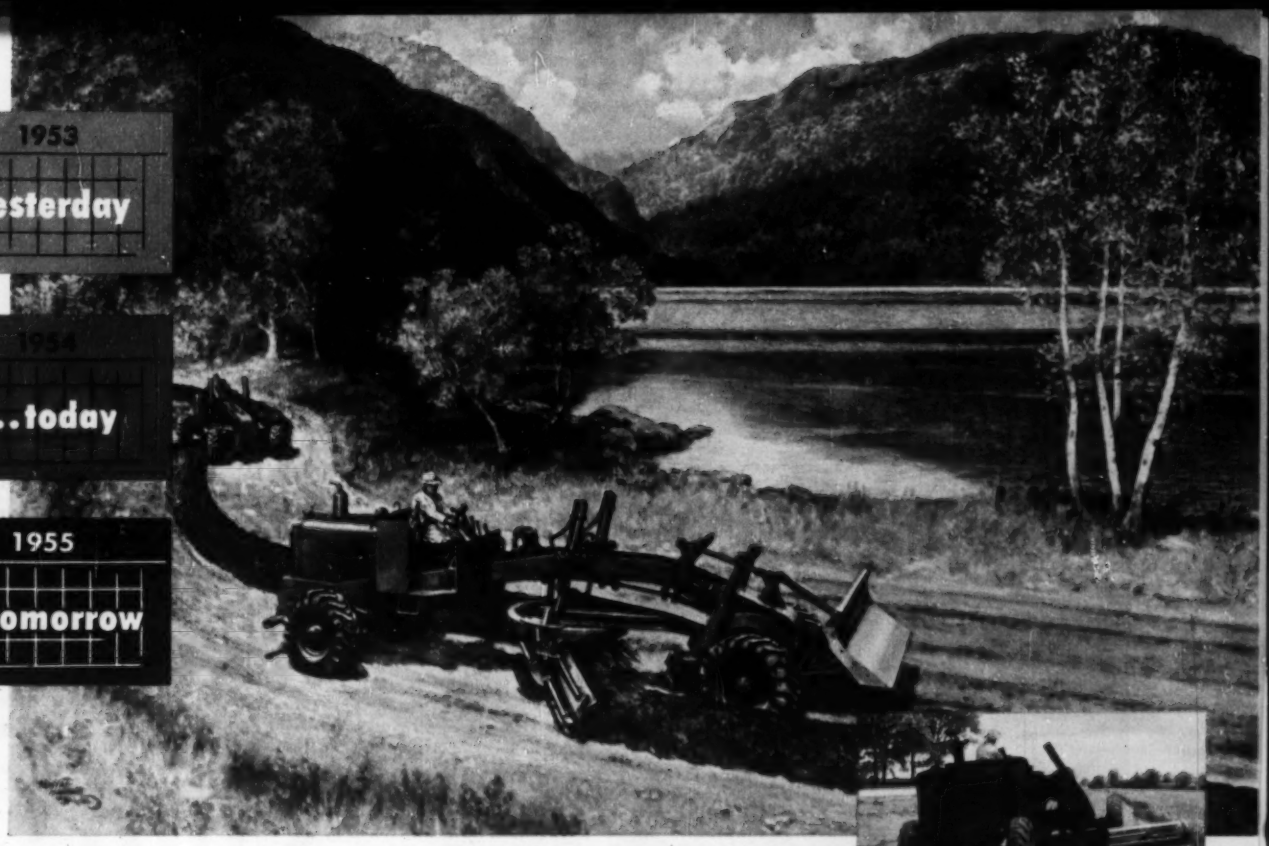
The first big postwar project—the real launching of the firm into commercial work—came about as the direct result of its residential work. When Bullock's, one of Los Angeles' major department stores, decided to build its first suburban branch, in the wealthy city of Pasadena, Board Chairman P. G. Winnet thought of Wurdeman and Becket homes he'd been in and admired. Winnet wanted a store that didn't look like a store. He preferred a designer of fine homes to a

(Continued on page 53)

1953
yesterday

1954
...today

1955
...tomorrow



FINISHING SLOPES

CLEANING DITCHES

BUILDING ROADS

...on job after job...every day...every year

you've got to swing that rear-end...

for TOP performance

On jobs like these *(and dozens more)*—that unbeatable combination, all-wheel drive and all-wheel steer*does more and better work in less time and at lower costs!

******For the 17th Consecutive Year—Only Austin-Western has it.*

Austin-Western

Power Graders · Motor Sweepers
Road Rollers · Hydraulic Cranes

BALDWIN BLH LIMA-HAMILTON

Construction Equipment Division

Manufactured by
AUSTIN-WESTERN COMPANY
Subsidiary of Baldwin-Lima-Hamilton Corporation
AURORA, ILLINOIS, U.S.A.

"Save money? Sure!"

THAT, in a nutshell, tells you why so many wire rope users in excavating and construction prefer Roebling wire rope ...it speeds up operations...lasts longer on the job... saves money that really adds up.

For the last word in wire rope efficiency and economy, call your nearest Roebling office or distributor for a Roebling recommendation.

ROEBLING
A subsidiary of The Colorado Fuel and Iron Corporation

JOHN A. ROEBLING'S SONS CORPORATION, TRENTON 2, N. J. BRANCHES: ATLANTA, 934 AVON AVE. • BOSTON, 31 SLEEPER ST. • CHICAGO, 5525 W. ROOSEVELT RD. • CINCINNATI, 3253 FREDONIA AVE. • CLEVELAND, 13225 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST. • DETROIT, 915 FISHER BLDG. • HOUSTON, 6216 NAVIGATION BLVD. • LOS ANGELES, 5340 E. HARBOR ST. • NEW YORK, 19 RECTOR ST. • ODESSA, TEXAS, 1930 E. 2ND ST. • PHILADELPHIA, 230 VINE ST. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900 1ST AVE. S. • TULSA, 321 N. CHEYENNE ST. • EXPORT SALES OFFICE, TRENTON 2, N. J.

firm that had designed many stores and might be in a rut.

Wurdeman and Becket produced exactly what Bullock's wanted. Bullock's Pasadena is a striking building of stone and glass with nothing to identify it as a department store from the front except a discreet Bullock's sign. There are no sidewalk display windows and only one sidewalk entrance; the main entrances are from an offstreet motor court.

The firm's diversity was calculated—it didn't just happen. Becket has consciously striven for what he calls a "balanced office."

He thinks the "balanced office" makes good sense. It keeps the workload from great dips and surges. If work is down in one field, it will be up in another.

"If there's a depression," says Becket, using an extreme example, "store construction would stop. But public buildings, and probably hospitals, would pick up."

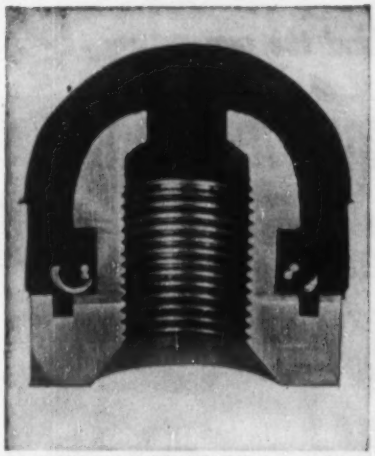
For similar reasons, Becket has tried to spread work around this country and abroad. Los Angeles, where decentralized shopping areas hit early, has about run out of new stores to build; but Chicago and other parts of the country are just getting started.

Work on the boards (19 projects totaling $96,830,000) and under construction (17 projects totaling $60,620,000) includes major shopping centers in Dallas, Milwaukee, San Francisco, and Los Angeles; hospitals in San Diego, Kansas City, and Los Angeles; hotels (both Hiltons) in Havana and Cairo; a bank in Sao Paulo, Brazil; factories in Kansas City and Toronto. He has small branch offices in New York, Kansas City, and San Francisco.

Becket believes that the growth of his firm has coincided with a coming-into-its-own architecturally of the West Coast.

Becket thinks that at least part of the reason is that the West Coast has been a magnet for bright young architects. Some of them have come out for the climate; some because of the movies; many because the West has been more willing to accept a fresh approach to architecture. "There's been a quicker acceptance out here of modern styles of architecture. In school these young men were taught contemporary design, and they gravitated toward a region where they could put into practice what they'd learned."

Chief designer, Maynard W. Woodard, moved to California from the Midwest. Like several other staff members, he went to Becket from the



TOUGH, LIVE RUBBER molded on Viber replaceable tip prevents vibrator damage to costly forms.

COILED SPRING around steel base firmly anchors rubber molded completely through and around tip.

Replaceable rubber tips save contractors thousands of dollars

• **Progressive contractors save** thousands of dollars by using rubber tipped vibrators to eliminate damage to forms of plywood and other expensive materials. This means longer form life and less cleanup time. Another important saving is longer housing life because the housing is subject to very little wear, and the tip (where most wear occurs) may be replaced when necessary.

Five years of successful field experience have proved that VIBER'S exclusive patented replaceable rubber tips will stand up under rigorous field conditions. As the result of such experiences, leading contractors like the Robert E. McKee Company have standardized on and use rubber tipped vibrators.

VIBER HOUSINGS LAST two to four times longer because of replaceable rubber tip, which screws on end of housing where most wear occurs. Rubber tip vibrators are available from 1-5/16 inch to 3 inch diameter.

• **Simple design** of Viber's patented replaceable tip combines a machined steel base and a molded rubber body. The base, as illustrated above, provides a positive attachment and mechanical interlocking of the two parts. This prevents any possibility of the rubber coming off in the field until it is literally torn and shredded away by reinforcing steel or the abrasive action of the concrete itself.

The machined steel base screws directly on the lower end of the housing. It is designed with the same outside diameter as the housing, so the complete assembly is perfectly smooth and will not catch or hang up in the form.

The vibrator does not lose any effectiveness when the rubber finally wears off, since vibration comes from the sides of the housing. Replacement of tip requires only long enough to unscrew the old tip and screw on a new one.

• **These patented replaceable** rubber tips are another example of the progressive design and planning which keeps Viber a leader in the field of vibration. For information on Viber's complete line of internal and external vibrators, contact your authorized distributor or VIBER COMPANY, 726 South Flower Street, Burbank, California. Dept. 67.

VIBER

CONCRETE VIBRATORS SINCE 1931

Ask the man behind the gun . . .

White gives you everything you want in an engineers' transit

Shown, model 7014 with "A" standard. "U" type also available.

WHY are more and more engineers and builders choosing White Engineers' Transits? Basically, the reason is simple: White transits are designed and built for the man in the field. They incorporate all the work-saving, accuracy-boosting features . . . the rugged construction . . . the simplified quality components that you want. In addition, you get coated optics, covered leveling screws and internal focusing Telescope. Wide frame tripod is optional.

Your choice of three reticules as shown below —

Fig. I—Cross hair arrangement for our standard levels.

Fig. II—Stadia hair arrangement for our standard transits.

Fig. III—Special stadia hair arrangement, furnished upon request.

To get the details on the complete White line of instruments for Engineers, Surveyors and Builders, write for Bulletin 1053. DAVID WHITE COMPANY, 315 W. Court Street, Milwaukee 12, Wisconsin.

DAVID WHITE COMPANY

We offer the most expert REPAIR SERVICE on all makes, all types of instruments.

movie industry. From 1936-45 he was chief designer for the Metro-Goldwyn-Mayer studios.

Becket is proud of the fact—and is sure it is important to his staff—that during the last 12 years, the office has had only one cutback, and that for only five or six men.

• **Talent not all**—Welton Becket is a modern businessman in his emphasis on packaging, selling, public relations. He is emphatic in his belief that today's architect must be trained to meet his particular public. He is strongly of the belief that architectural schools fall down in this respect.

"Graduates come out of school with good design training but without any training at all in how to meet the public," he says. "A man can be a fine designer, but he won't get much chance to use his talent if he can't present his case properly to prospective clients—including boards of directors."

Becket takes these things into consideration when hiring architects. Even his project architects, he says, must know how to handle themselves in public contacts, because all through the design stages they are dealing with clients or clients' representatives.

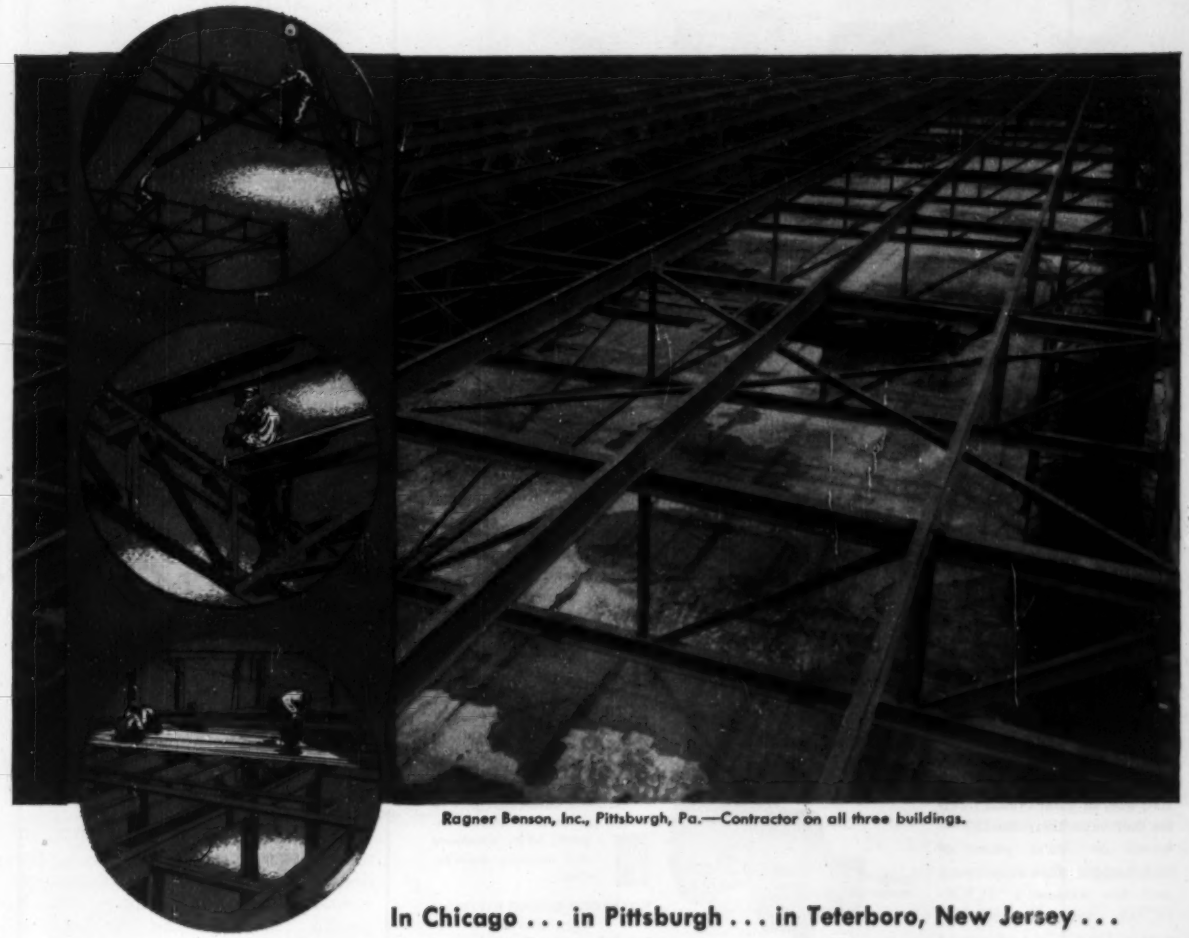
For the selling part of his business, as for the producing, he has picked top assistants. The work of getting new business and of customer relations generally is shared with two men, Kelvin Vanderlip and Jack Beardwood. (Public relations in the publicity sense is handled by a public relations counselor on retainer, who has his office in Becket's building.) Vanderlip, who is also the firm's real estate advisor, is former president of the Palos Verdes Development Corp. which developed the Palos Verdes Peninsula, an exclusive residential area southwest of Los Angeles proper. Beardwood is a former head of Life's Washington and Los Angeles bureaus and of the West Coast operation for Time-Life-Fortune.

Undoubtedly, heading an office like Becket's is not every architect's meat. For some, there would be frustration in functioning as a team captain whose creative efforts are merged in a group production.

But as for Welton Becket:

"The only thing that might make me feel frustrated," he says, "would be in failing to give the customer what he wants. With the help of a staff like this, I have the greatest confidence we'll meet the customer's needs. Architecture just isn't a one-man job any more."

(Continued on page 56)



Ragner Benson, Inc., Pittsburgh, Pa.—Contractor on all three buildings.

In Chicago . . . in Pittsburgh . . . in Teterboro, New Jersey . . .

the Ford Motor Company uses

J&L JUNIOR BEAMS

Three new Parts Depots now being built for the Ford Motor Company illustrate the versatility and adaptability of J&L JUNIOR BEAMS for all types of building construction. More and more architects, builders and contractors are recommending lightweight J&L JUNIOR BEAMS to solve their design problems.

Besides fast, economical construction—JUNIOR BEAMS allow for maximum safety, permanence of construction, functionality of design—and, still maintain a low over-all cost.

You'll also be interested in these other important features offered by J&L JUNIOR BEAMS. They are:

EASY TO INSTALL	**SHRINK PROOF**
RIGID	**FIRE PROOF**
VIBRATION RESISTANT	**VERMIN PROOF**

and have the **LOWEST DEFLECTION FACTOR OF ANY STRUCTURAL SECTION OF EQUIVALENT WEIGHT.**

Write today for our new booklet covering J&L JUNIOR BEAMS AND CHANNELS. It shows how JUNIOR BEAMS are used as floor joists and roof purlins, with loading and spacing tables for various spans.

J&L STEEL

JONES & LAUGHLIN STEEL CORPORATION

PITTSBURGH

see our catalog in S PRODUCT DESIGN FILE or write for copy

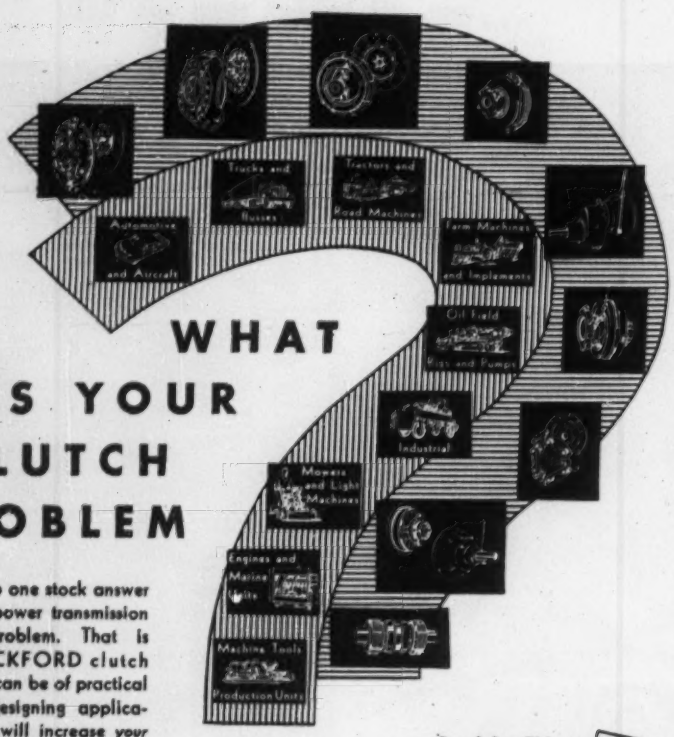
Jones & Laughlin Steel Corporation
428 Gateway Center, Pittsburgh 30, Pennsylvania

Please send me a copy of the booklet covering J&L JUNIOR BEAMS AND CHANNELS.

Name_____

Company_____

Address_____



WHAT IS YOUR CLUTCH PROBLEM

There is no one stock answer to every power transmission control problem. That is why ROCKFORD clutch engineers can be of practical help in designing applications that will increase *your* product's efficiency — make substantial savings in cost — and reduce servicing downtime. Send a print or a description of your clutch need for their recommendations — based on many years of clutch application experience and the extensive ROCKFORD line of clutches, power take-offs and speed reducers.

Send for This Handy Bulletin

Shows typical installations of ROCKFORD CLUTCHES and POWER TAKE-OFFS. Contains diagrams of unique applications. Furnishes capacity tables, dimensions and complete specifications.

ROCKFORD CLUTCH DIVISION
Borg-Warner
313 Catherine St., Rockford, Illinois

ROCKFORD CLUTCHES

ELIMINATE COSTLY CORE DRILLING

We specialize in construction seismic surveys to accurately determine overburden, depth to bedrock, or any sub-surface examination necessary for the construction of dams, highways, bridges and tunnels, etc. We can accurately map gravel deposits or potential water supplies.

*We invite your inquiries

Sub-Surface SEISMOGRAPH CORP.

P. O. BOX 5142 ● TULSA, OKLAHOMA

Becket has rarely gone outside California in assembling his staff. He found more trouble in establishing the small branches in Kansas City and New York than in staffing the big Los Angeles office.

The "balanced office" attracts good men because it holds out a solid promise of security and tenure in a field that is notably transient. He cites as an example a top supervising architect he had long wanted. The man recently chose a Becket job from among three chiefly because it offered the most security. The other jobs were for particular projects, with no assurance that they would be followed by others.

Top-level changes

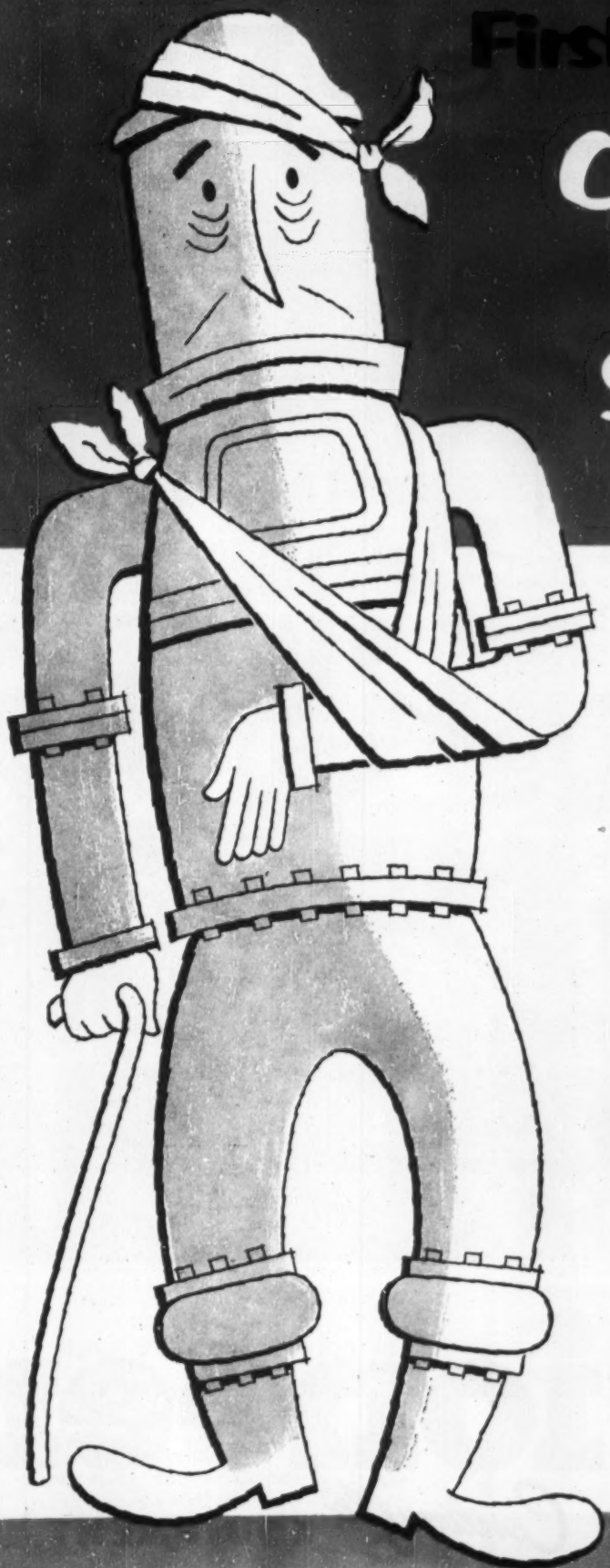
Four firms in engineering, construction and advisory fields have announced shifts in their top management personnel.

The George A. Fuller Co. has promoted vice-president Neil Horgan to executive vice-president, in charge of the New York office. T. S. Paulsen, vice-president and head of the Boston office, has been made a member of the board of directors. William R. Crowell, chief estimator, has been elected vice-president.

The Austin Co., Cleveland, has promoted vice-president Harold A. Anderson from eastern district manager to assistant general manager. Allan S. Austin, secretary of the firm, becomes vice-president and general sales manager—and will continue to serve as manager of sales-service to broadcasting and newspaper publishing industries. W. G. Paton, vice-president in charge of the steel fabricating division and technical personnel, succeeds Austin in the position of secretary. John N. Beckley, who has served as assistant general sales manager for the New York district office, has been named acting manager for the eastern district.

The H. K. Ferguson Co., Cleveland, announced the election of O. F. Sieder as president to succeed J. B. Bonny who has been made chairman of the board. Sieder has been serving as executive vice-president and general manager. H. W. Morrison, who resigned as chairman of the board, will continue with the company, in the capacity of a director.

Stone & Webster Service Corp., New York and Boston, has moved up retiring president George H. Clifford to the post of chairman of the board. R. N. Benjamin, vice-president since 1948, will take over as president of the firm.



First Aid for CRIPPLED WATER SYSTEMS

■ Are your water pumps past their prime? Wells showing signs of internal disorders? Better call in Layne for a checkup. Layne water supply specialists can get crippled water systems off their crutches in a hurry.

Emergency Repairs—Layne has the equipment, repair parts and skill to make emergency repairs in minimum time. Field crews are qualified to pull and repair all makes of vertical turbine pumps.

Water Well Acidizing—This often adds years to the life of failing water wells. It may be the answer to your water supply problem.

Layne repair and maintenance service, backed by 72 years of experience, keeps water supplies up and costs down. Get complete details now from your nearest Layne Associate Company. Or write Layne & Bowler, Inc., Memphis 8, Tenn.

Layne

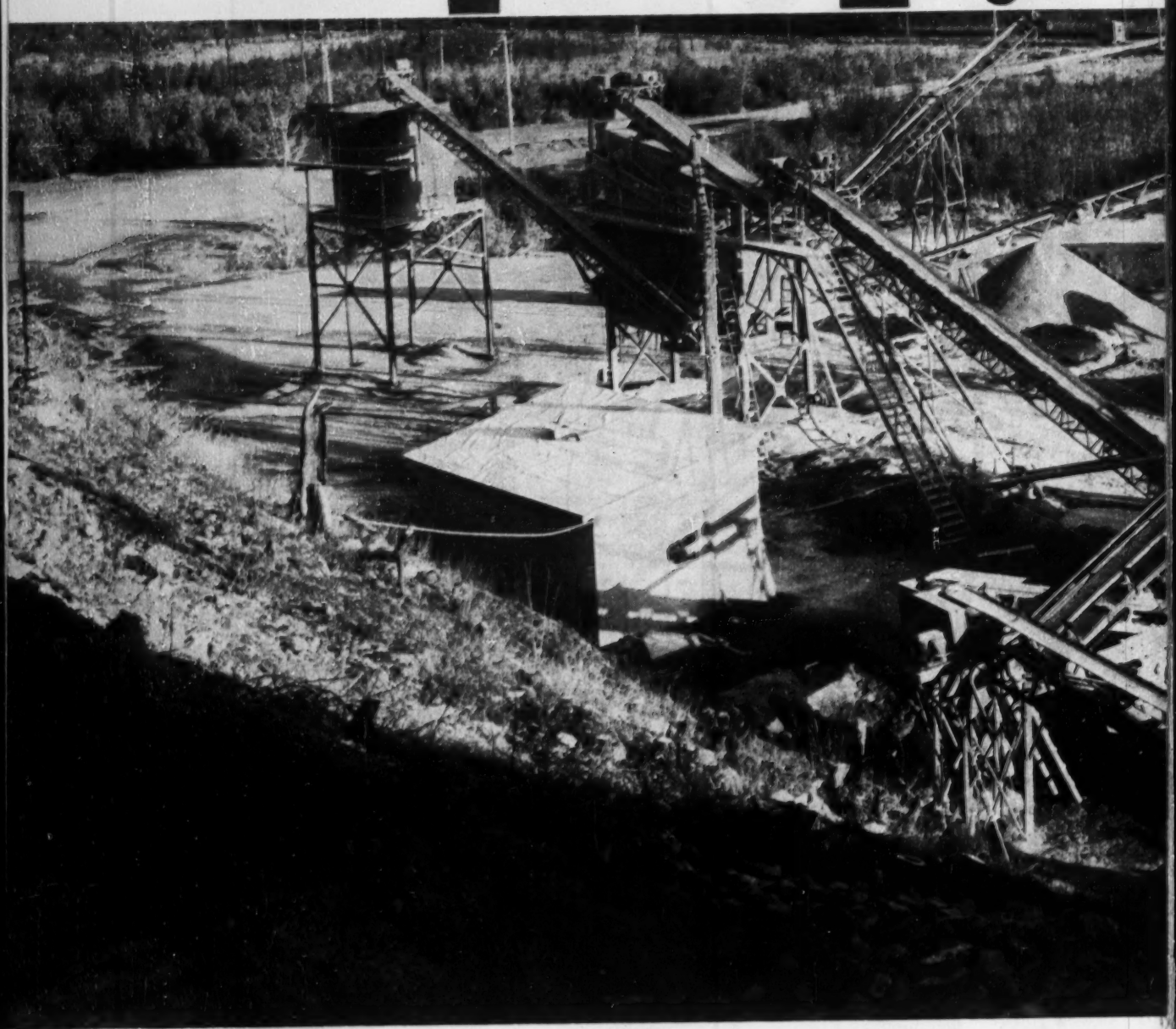
Water Wells
Vertical Turbine Pumps

WATER TREATMENT

Layne Associate Companies Throughout The World

When too much oversize became a problem...

that Pioneer Edge

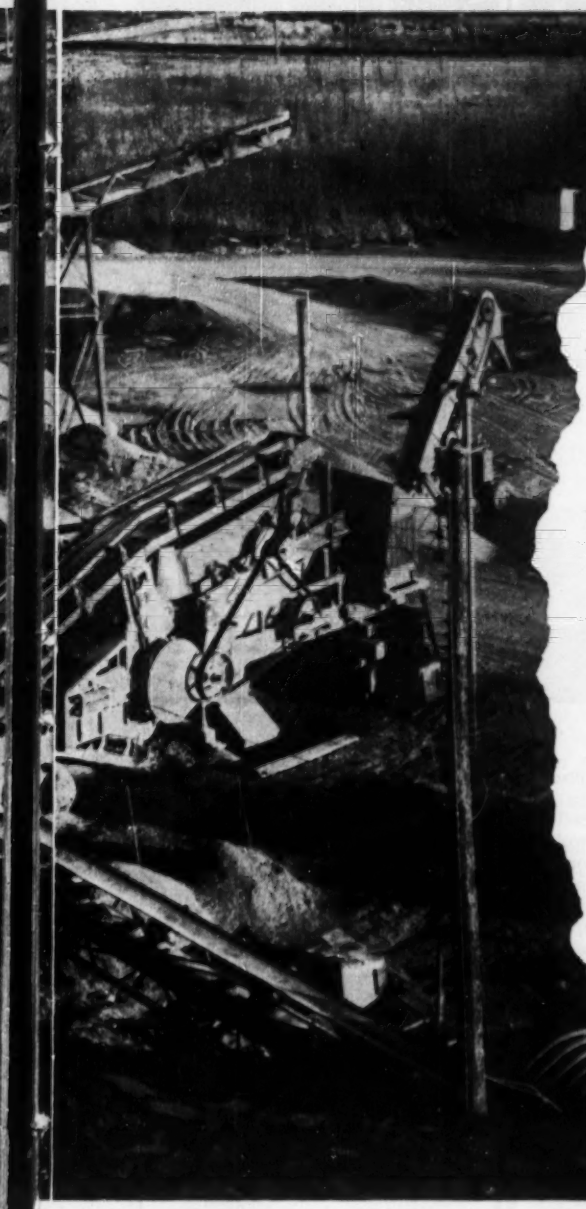


BUY BOTH!
HIGHER OUTPUT
LOWER UPKEEP

Pioneer

Continuflo EQUIPMENT

turned it into profit



How General Crushed Stone salvaged a heavy investment with help of Pioneer Portable Plant

Ingenuity is paying off for General Crushed Stone Co. of Easton, Pennsylvania.

When a big demand for ½" minus material developed in its Syracuse, N.Y. territory, GCS remembered it had a large investment in unused 2½" and 3" stone which had accumulated at a number of nearby quarries.

Since long hauls to a reduction crusher wouldn't be profitable, GSC decided to move in an efficient portable plant. The choice: a PIONEER 143S.

In this plant, a 40" x 22" triple roll crusher and 4'x 10' split-feed vibrator provide a 2-stage crusher coupled with 80 sq. ft. of effective screening area. PIONEER conveyors, a 4' x 20' tandem vibrator, and 75 cu. yd. storage bin complete the job.

Shown here as it operates 10 hours a day near Fayetteville, New York, the 143S is reducing large sizes to ½" minus at the rate of 65 tph and to 1" minus at the rate of 100 tons. General Crushed Stone is not only enthusiastic over the exceptional output from hard material, but is also pleased with the cubical product the 143S delivers.

Here is another case in which the PIONEER EDGE is paying off for an experienced producer who has joined his "know-how" with that of PIONEER.

You, too, can make extra profits by using PIONEER *Equipment. For detailed information, write or mail coupon . . . today!*

Have YOU a Crushing or Screening Problem?

An able and experienced engineering staff is at your service. PIONEER specialists with many years' experience will be glad to discuss your difficulties and help you work out a solution. Write to PIONEER today. *You'll be under no obligation.*

PIONEER ENGINEERING WORKS, INC.
1515 Central Avenue • Minneapolis 13, Minnesota
(SUBSIDIARY OF POOR & COMPANY • CHICAGO)

• Please send me information on the equipment checked.

☐ JAW CRUSHERS	☐ GRAVEL PLANTS	☐ APRON FEEDERS
☐ ROLL CRUSHERS	☐ WASHING PLANTS	☐ MECHANICAL FEEDERS
☐ ROCK PLANTS	☐ BITUMINOUS PLANTS	☐ VIBRATING SCREENS
☐ ORO FEEDERS	☐ BITUMINOUS PAVERS	☐ CONTINUFLO CONVEYORS

*Name*_____

*Company*_____

*Address*_____

*City*_____ *Zone*____ *State*_____

The first line of reducers is still the foremost line

T F

Old timers will recall the day—more than 20 years ago—when Taylor Forge announced the first comprehensive line of butt-welding fittings.

Before the WeldELL line was introduced, the only available welding fittings were elbows. But in the WeldELL line came all the fittings needed to do a complete and workmanlike job of pipe welding . . . the tees, reducers, caps, stub ends, and welding flanges.

To produce all of these types of fittings in seamless forged steel was a giant undertaking—and still is. A good example of this is the line of reducers. Today there are 175 reductions in standard weight reducers alone—and this can be multiplied by all the weights and materials in which Taylor Forge reducers are available.

The first line is still the foremost line—the engineered line, the full value line. For up-to-the-minute facts about the WeldELL line, see your Taylor Forge Distributor.

TAYLOR FORGE

TAYLOR FORGE & PIPE WORKS
General Offices & Works • Chicago 90 • P. O. Box 485
Plants at Carnegie, Pa., Fontana, Calif., Gary, Ind., Hamilton, Ont., Canada

Quake vote called

Oakland seeks approval of $30-million plan to "quake-proof" schools

The Board of Education in Oakland, Calif., recently authorized calling a special city election for voting on school and bond issues amounting to $30 million. The tentative date is Feb. 23.

Most of the money, $22.8 million, would be used to eliminate earthquake hazards at existing schools. The balance would be used for construction of new facilities to handle enrollment growth.

Four different propositions will be listed on the ballot with voters being instructed to vote on any one of the first three items (alternate issues), and the last.

Number one calls for a bond issue of $22.8 million to correct earthquake hazards at schools rated by engineering reports as very poor, poor and fair. Some 91 separate building units at 48 schools would benefit. Proposition one must have a two-thirds majority to pass.

The second proposition offers an alternative method of raising the money to repair the schools. It proposes a 90-c increase in the school district's tax rate, now $2.29.

A "yes" vote on proposition three would authorize the school board to do nothing more than abandon the dangerous schools and move the students into tents or other portable or temporary structures.

Both propositions, two and three, require a simple majority to pass.

The fourth proposition, which is not concerned with the other three, calls for a bond issue of $7.2 million for new construction to handle larger enrollments caused by population growth. It must have a two-thirds majority to go through.

If none of the first three propositions passes, the board will take no action about the schools. But it will have passed on to the voters the responsibility for any possible injury to schoolchildren in the 91 schools reported hazardous, according to the district attorney's office.

City's needs inventoried—$287-million plan results

When a Louisville, Ky., committee of businessmen and municipal government advisors inventoried the city's capital needs recently, it concluded that a $287-million improvement program is in order.

The proposed program is not a blueprint for a "dream city of tomorrow." Rather, it is concerned exclusively with basic needs—sewers, streets, schools, and other public facilities.

While some of the projects will be accomplished in the next two or three years, others are seen as long-range undertakings.

• **Sewerage**—For example, the committee estimated sewerage needs at $131 million over the next 49 years, with the Metropolitan Sewer District financing the entire program. Some of the money would come from a new drainage tax suggested by the "blue ribbon" body.

• **Traffic and streets**—To handle the increased traffic load that plagues the city, the group urged $50 million for expressways, $20.7 million for eliminating railroad grade-crossings and $10 million for general street improvements.

• **General needs**—For new public health facilities, the committee suggested an outlay of $11.3 million; for a new municipal penal institution, $28 million for public schools and $14.6 million for the University of Louisville. It was estimated that adequate expansion of the Louisville Water Company's facilities would require $8.6 million, and for miscellaneous improvements, the inventory was slightly over $1 million in city needs.

Despite what appears to be a large overall estimate, in terms of ability to pay, the committee believes that the financing of the $287-million program is not an impossible task.

During the last 12 months, Louisville has issued bonds or imposed special building taxes that will pay for $56 million in improvements, some of which were included in the latest inventory. An additional $6 million for interceptor sewers will be obtained shortly from increased sewer service charges. Thus, in little more than a year, the city has provided $62 million for capital improvements.

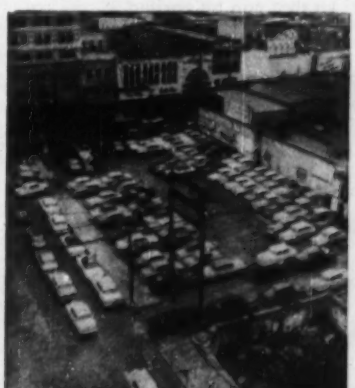
It is believed unlikely that there will be the slightest difficulty in raising the $8.6 million for new water facilities. The city-owned water company is a money maker and proposes to pay for new construction out of earnings, even though it is now debt-free.

As for the traffic system, one expressway is now nearing completion, and funds already are available for part of the costs of another. State and federal aid will be forthcoming, too.

Louisville's bonded indebtedness is liquidated by a sinking fund commission whose revenues come from a one percent city income tax. (The tax is called an "occupational license tax.") This tax currently provides the commission with $1 million more a year than it needs for debt retirement, with the surplus acting as a source of funds for capital improvements.

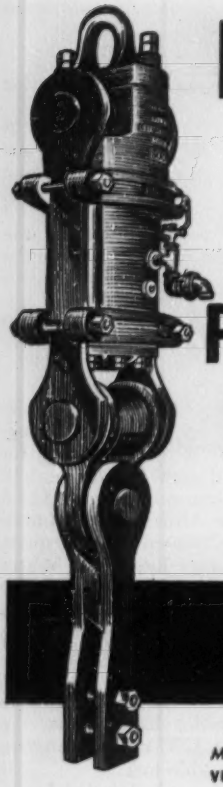
Against this background, it is claimed, the committee's recommendations appear both reasonable and realistic with little likelihood that

THE WRECKAGE of the R. T. Denis Department store in Waco, Tex., after the May tornado.



Wide World photos

THE CLEANUP accomplished, a parking lot now occupies the site of the store, supplying needed facilities.



POWERFUL PULL VULCAN PILE EXTRACTORS

Specialized power for pulling piles under the toughest conditions. Only one moving part, requires no adjustments and can't get out of order.

WRITE TODAY FOR COMPLETE DETAILS AND NAME OF NEAREST DEALER

VULCAN IRON WORKS

Manufacturers of Pile Driving Hammers and Pile Extractors Since 1852

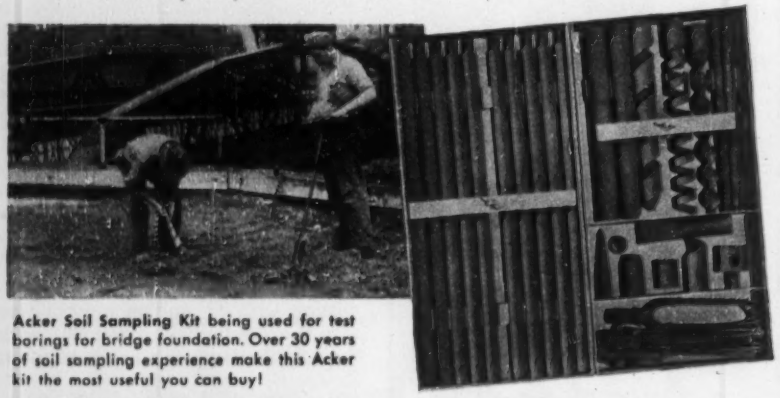
VULCAN IRON WORKS • 329 NORTH BELL AVENUE • CHICAGO 12, ILL.

DON'T GUESS!

use an ACKER SOIL SAMPLING KIT for accurate sub-surface information

With accurate sub-soil information, *you avoid* costly trouble later on. And, what better way to get this information than with a portable, easy to use Acker Soil Sampling Kit. For here is a versatile collection of twelve soil sampling tools packed in a handy steel kit that can be carried in any car.

Write today for prices and Bulletin 26, ENR.



Acker Soil Sampling Kit being used for test borings for bridge foundation. Over 30 years of soil sampling experience make this Acker kit the most useful you can buy!

ACKER DRILL CO., Inc. 725 W. Lackawanna Avenue Scranton, Penna.

a complete line of Diamond and Shot Core Drills, Drilling Accessories and Equipment

future administrations will find in them grounds for partisan controversy.

Municipal briefs . . .

• **Shopper incentives**—Parking facilities for 4,000 cars and air conditioning in all four of its buildings will be offered to the shoppers in a new $7.5-million shopping center in Willowick, a suburb of Cleveland, Ohio.

• **Underground parking recommended**—A 2,000-car underground garage has been suggested in conjunction with a seven-building redevelopment project in Columbus, Ohio.

• **Work progresses**—Close to $2 million (55% of the total program) worth of construction has been completed on a new sewerage project in Beaumont, Tex. Bids for construction of the treatment plant, largest unit in the program, have been received by city officials.

• **Sewer service charges** are now in effect in about one third of all municipalities in the United States that have a population in excess of 5,000, according to the U. S. Conference of Mayors.

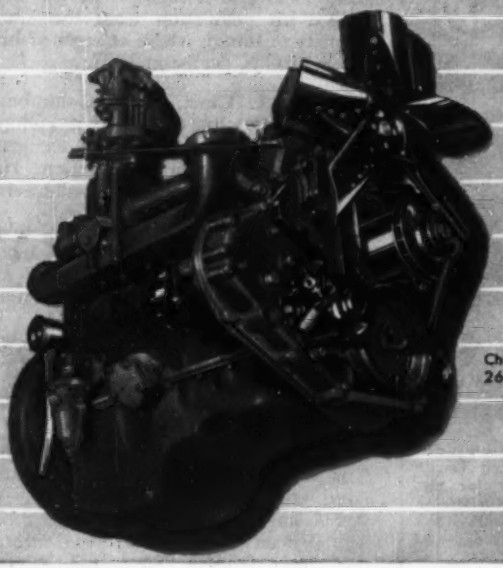
Pollution abatement results

The Ohio State Water Pollution Control Board recently tabulated the results of bond issue balloting. Voters in 20 communities passed bond issues for sewers and sewage disposal plants. Here's the box score:

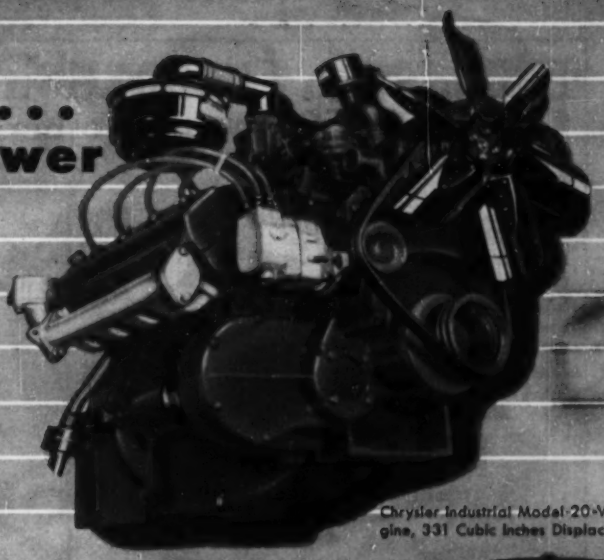
Akron	$10,000,000
Ada	150,000
Avon Lake	1,265,000
Ashtabula	1,500,000
Campbell	800,000
Clyde	250,000
Coshocton	968,000
Delphos	435,000
Fairport	200,000
Grand River	32,000
Hicksville	20,000
Kenton	200,000
Medina	100,000
Oak Harbor	230,000
Painesville	200,000
Silverton	125,000
Spencerville	125,000
Sylvania	146,000
Willard	69,000
Willoughby	800,000

Similar bond issues were defeated in five communities having a total population of 8,555.

For greater PAY in your PAYloads... specify CHRYSLER power

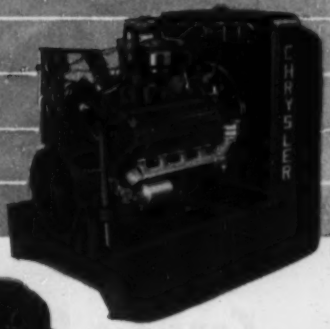


Chrysler Industrial Model 16 Engine, 265 Cubic Inches Displacement.



Chrysler Industrial Model 20-V-8 Engine, 331 Cubic Inches Displacement.

Chrysler Open Power Units include the complete engine, skid base, radiator and grille, instruments and instrument panel, flywheel and flywheel housing. (Pictured is V-8 Open Power Unit, which also includes a twenty-five-gallon fuel tank.)



There are ten Chrysler Industrial Engines and Power Units, from 217 cubic inches to 413 cubic inches displacement. All of them operate with gasoline, natural gas or L-P gas fuels.

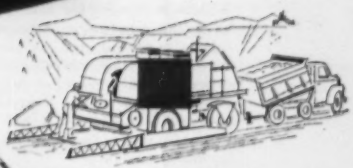
True to the Chrysler tradition, these engines, both In-line 6 and V-8, are among the most advanced design, best engineered and most powerful engines available today in their power ranges. Yet, thanks to famed Chrysler Research, they are constructed of lightweight, highly alloyed steels and allow amazing horsepower to weight ratios.

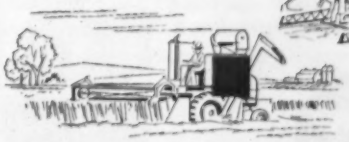
They are, therefore, ideal engines for most any equipment, regardless of size or silhouette. Let our nearest dealer give you more details, you'll be agreeably surprised to know how inexpensive Chrysler Power—*equipped to meet your specifications*—is . . . that's because Chrysler production facilities and manufacturing know-how allow us to custom-equip engines and make them available at mass-production prices.

Install Chrysler with confidence. Our nationwide dealer organization assures you good service and fast parts availability. If you prefer, write us: ***Dept. 81, Industrial Engine Division, Chrysler Corporation, Trenton, Michigan.***

Chrysler Enclosed Power Units have the complete engine, instruments, instrument panel, skid base, fuel tank, radiator and grille, as well as fully enclosing sheet metal—side panels and hood top panel.

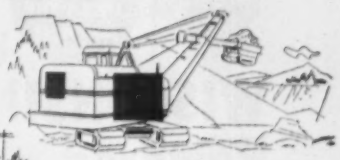
Street Paving Machine—powered with Chrysler Industrial Engine.





Farm Combine—powered with Chrysler Industrial Engine.

One-Half Yard Shovel—powered with Chrysler Industrial Engine.



Fork Truck—powered with Chrysler Industrial Engine.

CHRYSLER
Industrial Engines

HORSEPOWER WITH A PEDIGREE

Foundation Exploration
for Bridges, Dams and other Heavy Structures

For more than sixty years, Sprague & Henwood, Inc. has been a leader in the field of Diamond Core Drilling, Soil Sampling, and other types of exploration for the foundations of Bridges, Dams, Large Buildings, Airports, Highways, etc., working in conjunction with many of the country's leading engineers and architects.

Today, we have a large force of expert operators and an ample supply of modern equipment, so that we can undertake practically any job, anywhere, on very short notice. Estimates submitted promptly — quick action when you want it.

The Delaware Memorial Bridge

All of the Diamond Core Drilling and Soil Sampling (much of it from barges) for this highly successful suspension bridge — sixth largest in the world — was done by Sprague & Henwood, Inc.

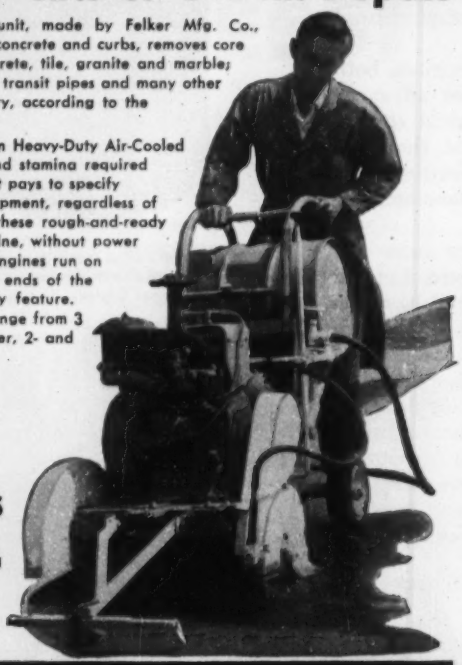
SPRAGUE & HENWOOD, INC.
SCRANTON 2, PA.

BRANCH OFFICES: NEW YORK · PHILA · PITTSBURGH · GRAND JUNCTION, COL. · BUCHANS, NEWFOUNDLAND

Concrete Cutter Cuts to 6½-in. Depths

This Wisconsin-powered Felker unit, made by Felker Mfg. Co., Torrance, Calif., cuts trenches in concrete and curbs, removes core samples, scores and grooves concrete, tile, granite and marble; cuts off and slits terra-cotta pipe, transit pipes and many other jobs in the same general category, according to the manufacturer.

The Model TF 2-cylinder Wisconsin Heavy-Duty Air-Cooled Engine has the lugging power and stamina required for rugged service of this kind. It pays to specify "Wisconsin Power" for your equipment, regardless of the service application, because these rough-and-ready engines fit the job and the machine, without power waste. *All* Wisconsin Air-Cooled Engines run on tapered roller bearings at BOTH ends of the crankshaft — a typical heavy-duty feature. Available in a complete power range from 3 to 36 hp., in 4-cycle single cylinder, 2- and 4-cylinder models.



Power TO FIT THE JOB · Power TO FIT THE MACHINE

It's WISCONSIN-Powered

WISCONSIN MOTOR CORPORATION
World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 46, WISCONSIN

A 7728-1½

OBITUARIES

John F. Fucik, 68, assistant engineer in the Bureau of Streets, died in Chicago on Dec. 16. He had been employed as a civil engineer by the city since his graduation from the University of Illinois where he received his B.S. of C.E. degree in 1907.

Marion A. Cinci, 32, a Columbus, Ohio, contractor, died at Elyria, Ohio, Dec. 11, as the result of an accident in Ohio Turnpike construction. He was crushed between two bulldozers.

John F. Vaughan, formerly hydraulic engineer with the Stone & Webster Engineering Corp. and later head of the consulting firm of Vaughan Engineers, Boston, died there Dec. 17.

James Hamlin, 51, who served Akron, Ohio, as a civil engineer for several years, died there Dec. 17.

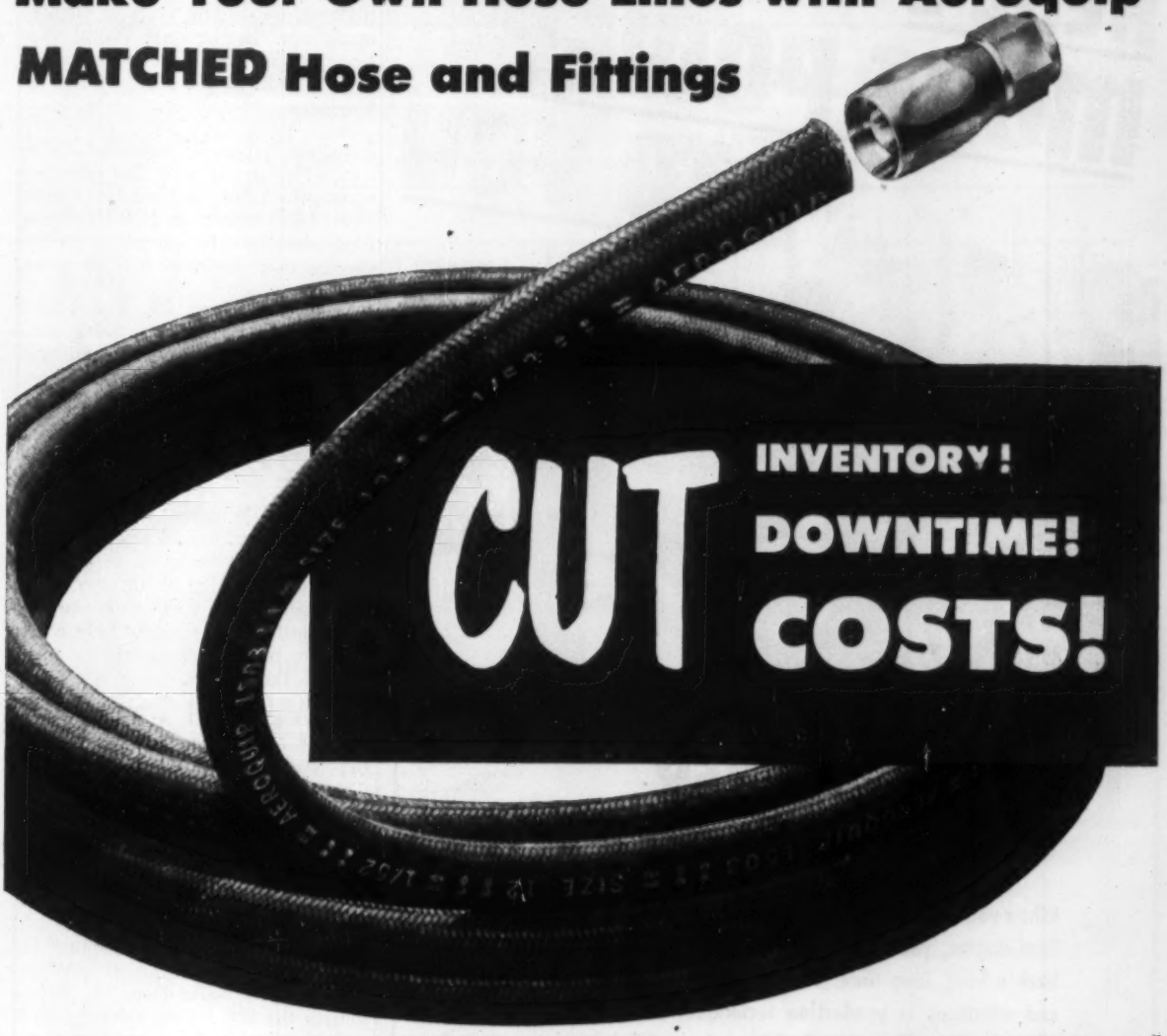
Alois Cibulka, 63, for many years consulting design engineer for the Standard Oil Co. in Texas and latterly a civil engineer in Los Angeles, died in that city Dec. 13. He was author of these books: "Simplified Piping and Pressure Vessel Design," "Practical Design Handbook for Structural Engineers," "Rigid Frames," and "Calculus for Practical Engineers."

George E. Russell, 75, professor emeritus of hydraulics at the Massachusetts Institute of Technology, and a former designing engineer for the American Car & Foundry Co.; Charles River Basin Commission, Boston; Water supply consultant; and advisor to the U. S. Coast Guard, died at Boston Dec. 4.

Paul Spencer Clapp, 63, died Dec. 5 in New York City. He was a former vice-president of the Columbia Gas and Electric Corp. in Ohio, and the Cincinnati Gas and Electric Co. He was a retired colonel in the Engineer Corps. Following World War I, he served on the engineering staff of the Allied Peace Commission, and was in charge of re-establishing telephone communications throughout central and southeastern Europe.

M. B. Willey, 58, a civil engineer graduate of the State University of Iowa, died at New Orleans Nov. 28. He was chief engineer for J. Ray McDermott & Co., Inc., for the last 9 years. Before that he had been with the Shell Oil Co. and was a consulting engineer in Lake Charles, La. He was a pioneer in the development of large

Make Your Own Hose Lines with Aeroquip MATCHED Hose and Fittings



Aeroquip Fittings are designed, developed, and produced to go with Aeroquip Hose. They form such a foolproof combination that Aeroquip *guarantees* performance. Thus, the hose lines made right in your own plant always measure up to Aeroquip's exacting standards of quality, the highest in the industry. A small supply of Aeroquip Bulk Hose and Fittings assures you of quick hose line replacements at all times . . . and Aeroquip Fittings are detachable and may be used again and again when making new hose assemblies.

Aeroquip

REG. TRADE MARK

AEROQUIP CORPORATION, JACKSON, MICHIGAN

SALES OFFICES: Burbank, Calif. • Dayton, Ohio • Hagerstown, Md. • High Point, N. C. • Miami Springs, Fla. • Minneapolis, Minn. • Portland, Ore. • Wichita, Kan.

IN CANADA: Preco Progress and Engineering Corporation Ltd., Toronto
IN ENGLAND: Super Oil Seals & Gaskets, Ltd., Birmingham

AEROQUIP PRODUCTS ARE FULLY PROTECTED BY PATENTS IN U.S.A. AND ABROAD

HERE'S MORE POWER TO YOU

. . . AT LOWER OVER-ALL COST

When you buy a vehicle or machine powered by Continental Red Seal engine, you "plug in on" specialized knowledge that goes back a long, long time. You benefit from engineering features, and advances in production technique, evolved over a period of more than 50 years. Red Seal dependability, economy and stamina have long been building prestige for quality leaders in the transportation, farm, and construction equipment fields . . . providing *more* and *better* power, at lower over-all cost.

Continental Motors also builds the world's outstanding line of heavy-duty four-cycle air-cooled models, for use on lawnmowers, garden tractors, and similar equipment. 2 to 3 h.p., they feature the exclusive Contex external ignition system, greatest air-cooled engine advance of recent years.

PARTS AND SERVICE EVERYWHERE

Continental Motors Corporation
MUSKEGON • MICHIGAN

OBITUARIES

platform oil drilling units in offshore operations. In the First World War he served in France and Germany as a lieutenant in the U. S. Corps of Engineers.

Fernando Nelson, 93, president of Fernando Nelson and Sons, San Francisco construction firm, and builder of more than 3,000 homes in San Francisco, died recently. He was active in the construction business for 60 years.

Edward S. Nelson, 79, retired civil engineer who was active in bridge construction, highway work and railroading in New England and the East, died at Georgetown, Mass., Dec. 9. He was at one time assistant to the chief engineer of the Pennsylvania Steel Co.

George R. Winslow, 82, of Sacramento, who retired 12 years ago after 30 years of service as an engineer in California's division of highways, died Dec. 6 in Tulare, Calif., from injuries in an automobile accident. He was a graduate of the Massachusetts Institute of Technology.

James Coburn, 71, retired superintendent of building construction for the Standard Oil Company of Indiana, died Dec. 16 in Chicago. He had been employed by the company for 25 years.

Clarence Talmadge Sluder, 52, of Asheville, N. C., who received his civil engineering degree from Georgia Tech, and recently had been an engineer for the Veterans Administration in Washington, D. C., died Dec. 13. Before joining the VA, he was with the Federal Housing Authority and with the Housing and Home Finance Agency.

Dorsey Sommerville, 70, chief engineer for the North Carolina State Highway Division at Durham, N. C., in 1919, and until two years ago a resident of Durham, died Dec. 19 at Prince Frederick, Md.

Lyle T. Maybee, right-of-way engineer for the Delaware State Highway Department, died Dec. 20 in Wilmington, from injuries in an automobile collision at Milford, Del. Mr. Maybee, who had been with the highway department for 24 years, was right-of-way engineer for the past several months.

Cecil B. Hopkins, 70, founder and president of Steelform Contracting Co. a San Francisco firm specializing in steel forms for concrete construction, died recently. He was a civil engineering graduate of Cornell.

MATERIALS AND LABOR PRICES

Market quotations on construction materials and wage rates reported monthly by ENR correspondents
February Materials, and Labor Prices will appear in February 4, 1954 issue

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots cash, dis. not deducted			SAND AND GRAVEL Per ton, carload lots Gravel,	Gravel,		CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8 x 8 x 16-in.; truckload del.; per block		CONCRETE Ready Mixed 1:2:4, over.
	Paper	Bulk	Mortar	1½ in.	¾ in.	Sand	1½ in.	¾ in.	1½ in.	¾ in.	Sand grav.	Lt. wgt. agg.	50 c.y., del.
Atlanta	$3.87	$3.56	$3.40	$2.075	$2.075	$1.83	$2.20	$2.20	$1.87	$1.99	$0.21	$0.21	$12.06
Baltimore	3.90	3.60	3.53	2.60‡a	2.60‡a	2.00‡a	2.75‡a	2.80‡a	2.65‡a	2.60‡a	.17	.17a	11.45
Birmingham	3.26	2.60e	....	2.53n	2.53n	2.23n	2.64	2.64	1.25	1.45	.165	.165	11.00
Boston	4.16	3.84	3.96	2.50a	2.50a	2.50a	1.50a	1.60a	....	....	.215	.245a	12.00k
Chicago	3.48	3.17	....	3.25‡b	3.25‡b	3.65‡b	3.25‡b	3.25‡b	2.25‡	2.25‡	.23	.23b	11.70/11.94
Cincinnati	3.76	3.55	3.55	2.19‡c	2.24‡c	2.24‡c	2.54‡c	2.54‡c	....	....	.21	.225a	10.95
Cleveland	N. A. in C. L.	3.19e		2.05ef	1.85f	1.65	4.10a	4.10a	3.35‡	3.15‡	....	.22	14.40d
Dallas	3.15	2.85	2.90	2.18	2.28	1.84	2.22	2.38	....	....	.11e	.2675	9.40
Denver	4.04	3.74	4.04	1.80	2.00	1.20	....	....	....	....	.23	.255a	10.50
Detroit	3.77	3.50	3.57	4.50‡b	4.50‡b	4.00‡b	4.25‡	4.25‡	4.25‡	4.25‡	.21	.22a	12.00f
Kansas City	3.52	3.22	3.30	1.85‡	1.85‡	1.50‡a	2.00‡a	2.00‡a	....	....	.20ag	.215c	12.25b
Los Angeles	4.52a	4.00a	5.00	2.16a	2.36a	2.11a	2.11a	2.21a	....	....	.135/m	.237m	11.78/h
Minneapolis	3.95d	3.64d	3.56	2.55‡ag	2.55‡ag	1.50‡ag	2.75‡ag	2.75‡ag	....	....	.21ik	....	12.75/i
Montreal	3.16ac	2.96ac	....	3.00r	3.00r	2.25	1.90oj	1.90oj	....	....	.20	.20a	10.55ab
New Orleans	3.35	3.02	3.18	2.32	2.32	1.82	....	....	1.05	1.25	.25	.....	12.90
New York	4.01	3.70	3.53	2.75bk	2.75bk	1.80bk	2.70bl	2.70bl	....	....	....	.....	13.55an
Philadelphia	3.58/3.97‡	3.27/3.64‡	3.58/3.63‡	2.75‡ep	2.75‡ep	2.15‡ep	2.30‡	2.40‡	2.00	1.90	.22/.25	.....	12.50ap
Pittsburgh	3.47	3.19	3.47	2.25‡	2.25‡	2.20‡	2.60‡	2.60‡	2.15	2.15	.22d	.22	13.00
St. Louis	3.42/3.63b	3.09/3.35b	3.25/3.42	2.90am	2.90am	2.30/2.90am	1.70j	1.70j	1.50	1.50	.22	.28ci	11.40
San Francisco	3.56	3.16	....	1.92	1.92	2.02	2.02	2.02	....	....	....	.27cl	11.25c
Seattle	4.65a	3.35a	5.80h	3.00‡bm	3.00‡bm	3.00‡bm	3.50‡bm	3.50‡bm	....	....	.25i	.3325i	11.40i

‡ Delivered. * Prices incl. dealers discount except as noted.
CEMENT: *a* Subj. to 10¢ dis. *b* Less 2% for cash. *c* CL price dealers discount not incl. *d* Dealers sell only LCL. *e* Truckload lots, destination price. *h* LCL.
SAND, GRAVEL, STONE & SLAG: *a* Truck lots. *b* Per cu. yd. *c* 5 tons or more. *e* ½". *f* Pea gravel. *g* Less 5% for cash. *h* Less than 5 tons. *i* Sales tax incl. *j* F.o.b. quarry. *k* Barge lots asd. *l* F.o.b. scow Hudson river. *m* Less 2% for cash. *n* F.o.b. cars. *o* 1–3 mi zone. *p* Add 10¢ for ea. add'l 3-mi zone.
CONCRETE BLOCK: *a* Cinder. *b* Waylite. *c* Haydite. *d* Celocrete. *e* 5¼ x 8 x 12 in. *f* 8 x 4 x 16. *g* F.o.b. truck at job. *i* Less 2% for cash. *j* Less 1% for cash. *k* 8 x 8 x 18. *l* F.o.b. plant San Rafael. *m* F.o.b. yard.
READY MIXED CONCRETE: *a* 5 cu. yds. or over del. Man. *b* 25 cu. yds. or more. *c* 10–100 cu. brackets. *d* 1–3 mi. zone. *e* 2,000 lb comp. *f* 2500 lb. comp. *h* Less 50¢ for cash. *i* 5% off for cash. *j* 2% off for cash. *k* Sales tax included. *l* 1:2½:4. *m* F.o.b. yard. *n* Plus escalator clause. *o* Add 15¢ for ea. add'l 3-mi zone.

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month; on carload deliveries, no trucking, same as dealer cash discount 10¢ per bbl. for payment within 15 days of date of invoice. Subject discount 10¢ per bbl. 20 days in Montreal.

CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For paper bags add 30¢ per bbl., not refundable.

	Bulk		Bulk		Bulk		Bulk		Bulk
Richard City, Tenn	$2.75†	Buffington, Ind	$2.70†	Steelton, Minn	$2.80†	Muskegon, Mich	$2.85†	Toledo, O	$2.80†
Clinchfield, Ga	2.75†	Independence, Kan	2.65†	Leeds, Ala	2.60†	Saginaw, Mich	2.75†	Milwaukee, Wis	2.90†
Kingsport Tenn	2.75†	Hannibal, Mo	2.70†	Duluth, Minn	2.80†	Wyandotte, Mich	2.75†	Green Bay, Wis	2.90†
West Des Moines, Iowa	2.80†	Northampton, Pa	2.75†	Hudson, N. Y.	2.75†	Buffalo, N. Y.	2.85†	Ironton, O	2.75†
Nazareth, Pa	2.75†	Universal, Pa	2.80†	Alpena, Mich	2.65†	Oswego, N. Y.	3.00†	Montreal City	2.66
Bath, Pa	2.75†	Waco, Tex. (+ 10¢ tax)	2.60†	Detroit, Mich	2.75†	Cleveland, O	2.80†	W. Winfield, Pa	2.80†

† *Prices to hold for first quarter of* 1954.

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	PAVING ASPHALT Per ton, less than 80 penetration Tank car	Drums	ASPHALT BINDERS—FLUXES Per gal., 80–300 penetration Tank car	Drums	CUTBACK ASPHALT Per ton Tank car	Drums	ROAD OIL Per gal. Tank car	ASPHALT EMULSION (Quick-breaking) Per gal. Tank car	Drums
Atlanta	$82.00	$41.00	$2.25	$26.00	$33.25	$0.215	$0.455	$0.095w	$0.185w	$0.105	$0.115	$0.225
Baltimore	150.00‡	75.00‡	.....	22.00i	.....	.0809i	0.15i	.09iw	.17iw	.09i	.09i	0.12i
Birmingham	.....	45.50i	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Boston	.....	.....	.....	24.50a	35.50a	22.00w	35.50w	.....	.....	.09a	.105a	.22a
Chicago	155.00‡	90.00‡b	3.60/3.65‡j	21.05b	31.05b	20.05bv	30.05bv	.099bw	.1890bw	.0775b	.....	.....
Cincinnati	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cleveland	200.00	65.00d	5.03g	23.00t	.....	23.00t	.....	.1025tw	.....	.....	.114	.184
Dallas	e	40.00	e	24.05	43.09	.1016	.2103	27.09	47.87	.098	.1014	.2128
Denver	.....	50.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Detroit	.....	98.00	.....	27.21	.....	27.21v	.....	.1202w	.....	.0925	.....	.2811
Kansas City	e	e	e	16.20cl	.....	.06	.....	.07sw	.....	.06c	0.10	.....
Los Angeles	e	.....	e	16.00dmx	.....	16.00dx	.....	18.00dx	.....	17.00dv	.0825j	.1725j
Minnepolis	.....	.....	2.97h	22.00	.....	24.07	.....	.0744w	.....	.08	.10	.....
Montreal	.....	e	e	27.10n	36.65n	.135n	.193n	16.30nu	18.80nu	.132n	.184ns	.225ns
New Orleans	.....	.....	.....	17.50ev	....o	17.50ev	....o	.085ew	....o	.0825#	.085	.....
New York	.....	.....	2.75f	25.26q	46.59q	24.26st	45.58st	.1071w	.2021w	.1071	.1072	.1993
Philadelphia	175.00	110.00	4.06	22.00	.....	.....	.....	.095u	.....	.....	.....	.....
Pittsburgh	165.00	48.00	4.60	27.00	37.00	.10	.21	27.00	40.00	.095	.10	.22
St. Louis	.....	.....	.....	18.66f	.....	.1758	.....	.084/.0865w	.....	0.155	.10	.....
San Francisco	.....	55.00e	.....	17.50q	33.00qp	17.50qkv	33.00qkv	20.00q	37.50q	18.75v	.085y	.....
Seattle	.....	.....	.....	17.50h	38.00h	17.25hv	.....	20.00h	.....	19.75hv	.085h	.095hv

‡ Delivered.
PAVING BRICK & BLOCK: *a* CL. *b* 3½ x 4 x 8½. *c* 2¼ x 8¼ x 4. *d* LCL, truck deliveries. *e* Not used. *f* 2" interior 6# treat. *g* 3" *h* 8# treat. *i* 3 x 3¾ x 8½. *j* 2½", 6 tr
ASPHALTS: *a* Price at plant, Everett, Mass. *b* F.o.b. refinery Lockport, Ill. *c* F.o.b. Sugar Creek, Mo. *d* F.o.b. refinery, El Segunda. *e* F.o.b. Baton Rouge. *f* F.o.b. Wood River or Roxana, Ill. *g* F.o.b. Richmond, Calif. *h* F.o.b. Martinez. *i* F.o.b. refinery, Baltimore. *j* F.o.b. refinery, Inglewood, Calif. *k* 50–110 penetr. *l* Less than 100 penetr. *m* 40–50 penetr. *n* Tax incl. *o* Drums not avail. *p* Shipped in steel bbl. *q* 40–85 penetr. *r* In customer's drums. *s* Shipped in drums, per drum. *t* 85–300 penetr. *u* Per 100 gal. *v* Per ton. *w* Per gal. *x* Also tank trucks *y* F.o.b. Oakland. *z* F.o.b. refinery, Cleveland. # F.o.b. Norco, La.

IRON AND STEEL PRODUCTS—PER 100 LBS. BASE MILL PRICES

	STRUCT SHAPES—	PLATE CARBON STEEL	REINF BARS billet	RIVETS ½-in. structural	SHEET PILING Base	STEEL RAILS Per Net Ton Standard	STEEL RAILS Per Net Ton Light	STEEL RAILS Per Net Ton Re-rolled	TRACK SUPPLIES Angle Bars	TRACK SUPPLIES Std Spikes	TRACK SUPPLIES Tie Plates	TRACK SUPPLIES Track Bolts
Birmingham Area	$4.10	$4.10	$4.15	$8.90	....	$86.50	$104.00	Not	$5.275	$7.05	$5.125	....
Chicago Area	4.10	4.10	4.15	8.90	$4.925	86.50	104.00	avail-	5.275	7.05	5.125	....
Pittsburgh Area	4.10	4.10	4.15	8.90	4.925	86.50	104.00	able	5.275	7.05	5.125	$11.00
Buffalo Area	4.10	4.10	4.15	8.90	4.925	86.50	104.00	....	5.275	7.05	5.125	11.00
Cleveland	....	....	4.15	8.90	4.925	.....	.....	....	....	....	....	11.00
Youngstown Area	....	....	4.15	....	....	.....	.....	....	....	7.05	....	....
Geneva	4.10	4.10	....	....	....	.....	.....	....	....	....	....	....
Los Angeles	....	....	....	....	4.925	.....	.....	....	....	7.05	....	....
Pueblo	4.30	4.70	4.75	....	....	.....	95.00	....	5.275	7.05	5.125	11.00

IRON AND STEEL PRODUCTS—F. O. B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb. base price	REINFORCING BARS Per 100 lb., base price u 5 tons to carload lot b New billet	REINFORCING BARS Per 100 lb., base price u 5 tons to carload lot b Rail steel	REINFORCING BARS Add switch	REINFORCING BARS $/cwt for Del.	EXPANDED METAL LATH‡ Per 100 sq. yd., carload lots Std. diamond mesh, 3.4 lb.	EXPANDED METAL LATH‡ Per 100 sq. yd., carload lots Std. ribbed 3.4 lb.	WELDED FABRIC REINFORCING‡ Per 100 sq. ft., carload lots 4x16 in., No. 5 & 10 wires	WELDED FABRIC REINFORCING‡ Per 100 sq. ft., carload lots 4x12 in., No. 8 & 12 wires	WELDED FABRIC REINFORCING‡ Per 100 sq. ft., carload lots 6x6 in., No. 6 & 6 wires
Atlanta	$7.31	$7.11	$7.11	$.025	$...	$38.00‡	$42.00‡			
Baltimore	6.98	6.91*l*	....	....	....	42.00	45.00			
Birmingham	6.35	6.15	6.15	.05	.15	47.00*p*	52.00*p*			
Boston	7.06*a*	7.22	7.22	....	....	40.50	44.50			
Chicago	6.46	5.75*ff*	5.75*ff*	.0625	....	46.00*C*	51.00*C*			
Cincinnati	6.93*ak*	6.91*r*	....	....	.15	39.00*xxee*	43.00*xxee*			
Cleveland	6.79	5.61*r*	....	....	....	39.00‡	43.00‡			
Dallas	9.05	7.25	7.25	....	....	49.00	52.00			
Denver	7.95	7.30*e*	....	....	....	52.50*s*	64.50*qs*			
Detroit	6.91	7.04*n*	....	....	.20	50.50	54.50			
Kansas City	7.05*nn*	7.27	....	....	....	43.50	45.00			
Los Angeles	7.35*fkk*	6.85*g*	....	....	....	51.00	57.00			
Minneapolis	6.92*kk*	7.53*ll*	7.53*ll*	....	....	37.00	41.00			
Montreal	8.20*iB*/9.20*A*	6.20*i*	6.20*g*	....	....	53.50*k*	58.50*k*			
New Orleans	....	5.98*ak*	....	.05	....	66.00	60.00			
New York	7.20	7.01	7.01	....	.20	38.50*gt*	44.00*gt*			
Philadelphia	6.42	6.67	....	....	....	38.00‡	42.00‡			
Pittsburgh	6.40	6.40	....	....	.10	37.60	39.60			
St. Louis	6.86*a*	6.30*e*	6.30*e*	....	....	55.00*aa*	56.00*aa*			
San Francisco	7.25	6.85*l*	....	....	....	40.50	43.50			
Seattle	4.85*e*	6.20*al*	....	....	....	51.00*mmm*	57.00*mmm*	A.P.M.* Joliet, Illinois, Donora, Penn., $3.08 F.o.b. Mill: Monessen, Penn., $3.08	A.P.M.* Joliet, Illinois, Donora, Penn., $2.02 F.o.b. Mill: Monessen, Penn., $2.02	A.P.M.* Joliet, Illinois, Donora, Penn., $3.23 F.o.b. Mill: Monessen Penn., $3.23

‡ Delivered. *b* Less than 700# add 50¢; 700–1499# add 65¢; 1500 to 7999# add 50¢. *c* 20 tons or over base. *d* Mill price plus freight. *e* F.o.b. plant. *f* Includes delivered in free delivery zone. *g* 10,000 to 39,999 lbs. *h* List price. Dominion tax exempt. Provincial and Municipal tax extra. *i* Plus Dominion, Provincial and Municipal sales tax. *k* F.o.b. city. *l* Intermediate and hard grade, new billet. *m* Per sq. yd. *n* 5–10 tons. *o* 5 to 20 tons base. *p* Del. of 500 sq. yd. or more. *q* Std. ribbed, 4 lb. per sq. yd. *r* 5 tons or over. *s* LCL. *t* Asphalt coated. *u* Note: Revised size extra—1 in., 1¼ in., 1½ in., 30¢, ¾ in., ⅞ in., 45¢, ⅝ in., 55¢, ½ in., 80¢, ⅜ in., $1.10, ¼ in., $2.20. *v* 20 tons. Straight. *w* Copper bearing. *y* $0.0093 transportation tax included *z* Copper alloy. *aa* Delivered truck to job. Contractor to do unloading. *ee* F.o.b. cars. *ff* Carload lots. *gg* Including sales. *kk* 10,000–19,999 lbs. *ll* 5 to 8 tons, f.o.b. city. *mm* 2% off for cash. *nn* 1–5 tons. *qq* 10 tons to CL. *s* 2000–9999 lbs. *A.* Amer. struct'l shapes. *B.* Canadian shapes. *C.* Deliv to contractor.

* At Prodneing Mill.

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

	C. I. PIPE Per net ton f.o.b. 6 in. to 24 in.*a*	ASBESTOS CEMENT PIPE per lin. ft., f.ob. city 6" Pr Cl. 150	ASBESTOS CEMENT PIPE per lin. ft., f.ob. city 12" Sew Cl. 1	VITRIFIED SEWER PIPE Per foot, Delivered ASTM C13-44T std. 8 in. *a.s.*	VITRIFIED SEWER PIPE Per foot, Delivered ASTM C13-44T std. 12 in. *a.s.*	VITRIFIED SEWER PIPE Per foot, Delivered ASTM C13-44T 24 in. *da.*	VITRIFIED SEWER PIPE Per foot, Delivered ASTM C13-44T 36 in. *da.*	CLAY DRAIN TILE ASTM C4-24 Per 1,000 ft., carload lots, f.o.b. 6 in.	CLAY DRAIN TILE ASTM C4-24 Per 1,000 ft., carload lots, f.o.b. 8 in.	CONCRETE SEWER PIPE Per ft., delivered: ASTM C 14-41 12 in.	CONCRETE SEWER PIPE Per ft., delivered: ASTM C 14-41 24 in.
Atlanta	$101.00	$1.45	$2.42	$ .545	$1.27	$4.82	$12.925	$248.00	$358.00	$0.90*m*	$3.40*m*
Baltimore	121.50	1.45	2.42	.518	.990	4.095*A*	11.1725*A*	178.20	274.80	.95	2.60
Birmingham	103.00	1.45	2.42	.42	.75	2.99	....	250.00‡	375.00‡	1.25*m*	2.75*m*
Boston	122.00	1.47	2.20	.553*uvz*	1.0665*uvy*	4.41*uvy*	11.90*uvy*	187.80*v*	289.20*v*	1.62*mg*	3.95*mg*
Chicago	107.00	1.45	2.20	.70*m*	1.35*m*	5.62*m*	13.50*m*	150.00‡	270.00‡	.80	2.80
Cincinnati	106.00	1.47	2.29	.581*y*	1.120*y*	4.41*y*	11.375*y*	164.40	254.10	.80*m*	2.95*m*
Cleveland	108.00	1.47	2.29	.462*z*	.945*z*	3.60*z*	10.04*z*	158.00*m*	245.65*m*	.82*m*	3.10*m*
Dallas	112.00	1.47	2.54	.436	.822	3.234*b*	9.17*b*	.....	.....	.49	1.60
Denver	115.00	1.53	2.54	.45*dd*	.78*dd*	3.48*dd*	....	.....	.....	.74*m*	2.50*m*
Detroit	108.00	1.47	2.29	.75	1.45	5.75	15.50	230.00*m*	350.00*m*	.86	3.47
Kansas City	113.00	1.47	2.29	.53	.945	2.87	10.60	250.00	480.00	.80*g*	3.25*g*
Los Angeles	126.35	1.53	2.29	.62*f*	1.26*f*	5.21*f*	14.80*f*	228.20*f*	348.90*f*	.95	2.75*ff*
Minneapolis*	112.00	1.49	2.42	.72*mo*	1.32*mo*	5.32*mo*	....	.....	.....	1.38*k*	3.93*k*
Montreal	110.00	....	....	.85*z*	1.50*z*	5.25*z*	8.50*z*	.....	.....	1.17*k*	3.11*j*
New Orleans	101.50	1.45	2.42	.53	.965	5.13	....	300.00*kk*	500.00*kk*	.65	2.29
New York	111.35	1.47	2.20	.61	1.22	4.82	12.81	.....	.....	1.15	3.00
Philadelphia	110.00	1.45	2.20	.55	1.28	4.95*A*	12.65*A*	300.00‡	350.00‡	1.60*k*	3.95*k*
Pittsburgh	110.00	1.47	2.20	.425*m*	.794*m*	2.97*m*	7.92*m*	182.00	244.00	1.05*k*	2.50*k*
St. Louis	112.00	1.45	2.29	.56	1.03	4.22	9.80	180.00‡	380.00‡	1.20*kl*	2.85*kl*
San Francisco	127.00	1.53	2.29	.61*d*	1.20*d*	5.03*d*	12.57*d*	240.00‡	400.00‡	.73	3.02
Seattle	122.00	1.54	2.42	.51*b*	.91*b*	....	....	150.00*c*	.....	.77*ee*	2.30*ee*

‡ Delivered. *a* Class B & heavier. Based on existing freight rates; subject to rate change. Gas pipe and class A, $5 per ton additional. 4 in., $7 per ton additional. 30 in. and larger, usually, $1 per ton less. *b* Extra strength ASTM C 200–44T. *c* 4-in., $90. *d* 8836l-A. *e* 30-in. *f* F.o.b. factory. *g* Culvert pipe. Reinforced, ASTM C76–41. *k* Reinforced, ASTM C75–41. *i* Reinforced, ASTM C76–37. *j* Centrispun. No. standard specifications in Can. *l* F.o.b. plant. *m* Truck delivery. *o* Listed price is based on LCL (no minimum). *u* ASTM C13–40. *v* C.L.f.o.b. origin, freight allowed. *x* 2 ft. lengths. *y* 3 ft. lengths. *z* CESA A 60–1941 specifications used. *aa Extra strength ASTM C–200–50.* A standard strength. * 6", $1.67 per ft.; carlots, F.o.b. track Class 150. *bb* Freight allowed to destination in city. *dd* LCL delivered, f.o.b. truck. *ee* 2% off for cash. *ff* 21".

	WROUGHT STEEL PIPE (Full standard weight) Discount from list see footnote											
	3½ to 6 in. Lap Weld‡ Black %	3½ to 6 in. Lap Weld‡ Galv. %	2½ & 3 in. Butt Weld‡ Black %	2½ & 3 in. Butt Weld‡ Galv. %	¼ to 2 in. Butt Weld‡ Black %	¼ to 2 in. Butt Weld‡ Galv. %	a 3½ to 4 in. b Coutnuous	d 6 in.
Lorain, Ohio	27.75*a*	11.00*a*	27.75*a*	11.00*a*	36.75	20.50		
Aliquippa, Pa.	22.75*a*	6.00	22.75*a*	7.75*d*	34.75	18.50		
Sparrows Pt., Md.	26.50*t*	9.75*t*	26.50*t*	14.75*ab*‡0.50*ab*	36.75	20.50		
Benwood, W. Va.	26.75*ab*	10.00*a*	26.75*ab*	10.00*a*	36.75	20.50		
Youngstown, O.					36.75	20.50		
Indiana Harbor, Ind.					35.75	19.50		
Sharon, Pa.	27.75*a*	11.00*a*	27.75*a*	11.00*a*	36.75	20.50		
Wheatland, Pa.	26.50*d*	7.75*d*	26.50*d*	7.75*d*	36.75	20.50		
Elna, Pa.	26.75*ab*	10.00*a*	26.75*ab*	10.00*a*	36.75	20.50		
Fontana, Calif.	14.75*ab*	0.50*ab*	14.75*ab*	0.50*ab*	23.75*b*	10.00*b*		

‡ Threaded and coupled. *a* 3½ to 4 in. *b* Coutnuous weld. *d* 6 and 6 in.

* WROUGHT STEEL PIPE: Deduct discounts shown above from the following standard list consumers carload prices to get mill price. List prices per ft. (based on approx. $200 per net ton): *Butt Weld* ¼ in., 5½¢; ⅜ in., 6¢; ½ in., 6¢; ¾ in., 8½¢; 1 in., 11½¢; 1¼ in., 17¢; 1½ in., 23¢; 1¾ in., 27½¢; 2 in., 37¢; 2½ in., 58½¢; 3 in., 76½¢. *Lap Weld* 3½ in., 92¢; 4 in., $1.09; 5 in., $1.48; 6 in., $1.92. Add freight rates plus 3% transportation tax to get destination price.

WROUGHT IRON PIPE: List prices per ft. same as for wrought steelpipe, but add following "discounts" to get Pittsburgh mill price: *Butt Weld* — ⅜ in. black, + 32.75, galv. + 57.0; ½ in. black, + 32.75, galv. + 56.5, ¾ in. black, + 29.25 galv. + 52.75; *Lap Weld* — 2½ in. to 3 in. black + 33.50 galv. + 55.5; 4½ in. to 6 in. black + 30.50 galv. + 50.75. Add freight rates plus 3% transportation tax to get destination price. (Continued on p. 71.)

Figure your costs with BARCO for the "low bid" on any job!

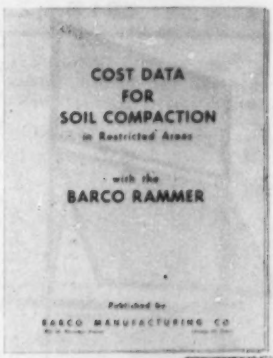
SOIL COMPACTION JOBS no longer need present problems. With Barco Rammers, progressive contractors throughout the Nation are finding that specifications calling for 95% to 97.5% compaction represent opportunities for profitable work. FOR THE LOW BID ON ANY JOB, FIGURE YOUR COSTS WITH BARCO!

See for yourself; ask for a demonstration. *Worldwide Sales and Service.* BARCO MANUFACTURING COMPANY, 514B Hough Street, Barrington, Illinois. *In Canada:* The Holden Co., Ltd., Montreal, Canada.

AREA TAMPING—On high degree specified compaction with 12" to 20" lifts, the Barco Rammer will cover from 1 to 1½ square yards of surface per minute. This means 20 to 30 cu. yds. of fill per hour, or 160 to 240 cu. yds. per 8 hr. day per Rammer.

TRENCH TAMPING—On trench back-fill, one Barco Rammer will tamp a trench 18" wide at the rate of 6 to 10 feet per minute or 360 to 600 feet per hour. Depending on soil conditions, lifts up to 24" may be used.

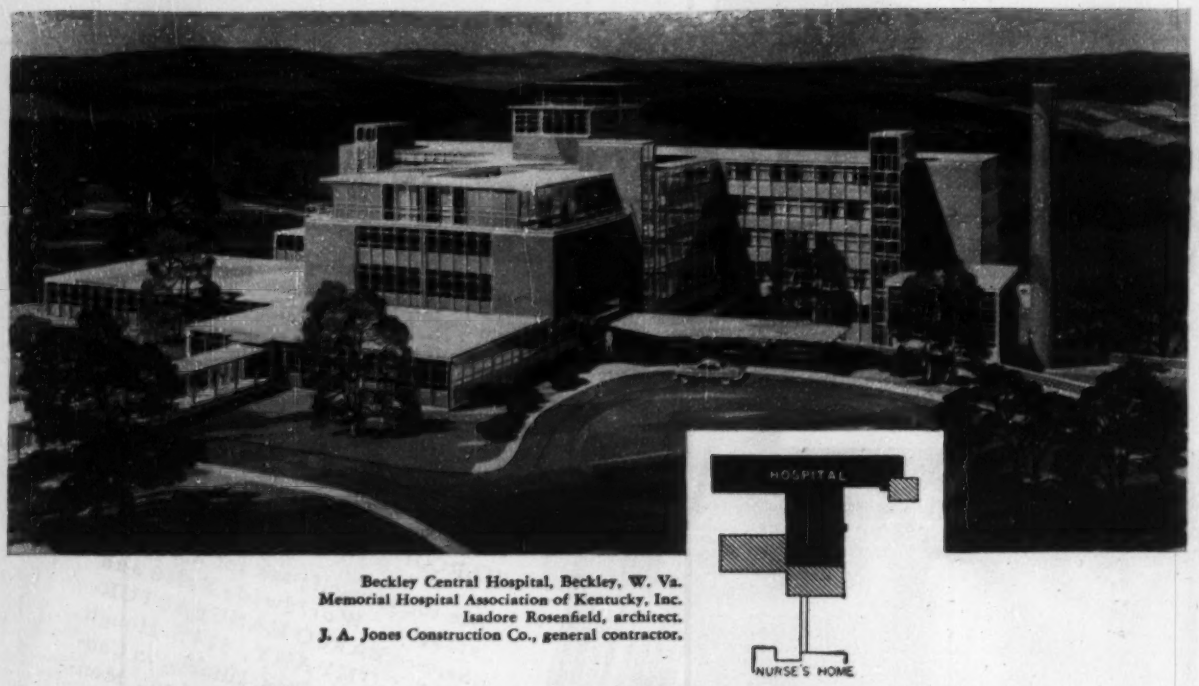
Write for this "COST DATA" Bulletin



BARCO *Gasoline* RAMMER

For Soil Compaction Close to Walls, Culverts and Abutments — in Trenches, Ditches

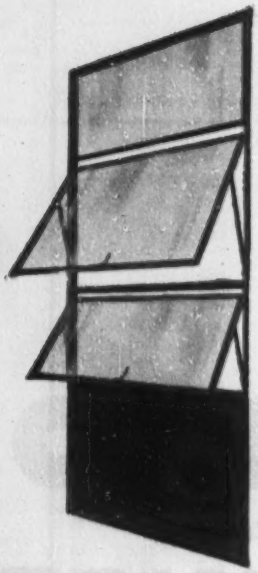
FREE ENTERPRISE—THE CORNERSTONE OF AMERICAN PROSPERITY



Beckley Central Hospital, Beckley, W. Va.
Memorial Hospital Association of Kentucky, Inc.
Isadore Rosenfield, architect.
J. A. Jones Construction Co., general contractor.

TRUSCON'S NEW VISION-VENT WALL

offers Mass-production Economy of Standard Steel Windows



This exciting new Truscon development opens entirely new concepts of window walls in steel and glass. Vision-Vent is a new building unit incorporating all mass-production and installation economies of standard steel windows. It is designed to cover entire wall surfaces.

Vision-Vent was developed in cooperation with architects, contractors and building owners. Initial application is a chain of ten hospitals built for the Memorial Hospital Association of Kentucky. Anticipated results of this new Truscon construction method are (1) simplicity of design, (2) weather resistance, (3) low first cost, (4) low maintenance cost.

Each Vision-Vent unit is complete—with fixed lights, awning type ventilators, and insulated steel panels. All elements may be varied to meet functional and appearance requirements. Insulated panels—in colored porcelain enamel or in stainless steel—have a "U" factor of .197, equal to that of an ordinary masonry spandrel wall. They retain interior heat. And, they provide for efficient air-conditioning. Minimum wall thickness provides extra square feet of floor space. Erection goes forward in any weather.

Vision-Vent construction is recommended for use in the design of all types of single or multi-story buildings. Truscon window engineers will be glad to study your requirements, and develop design details and costs. More details in Sweet's, or write:

TRUSCON STEEL DIVISION
REPUBLIC STEEL
1064 ALBERT STREET • YOUNGSTOWN 1, OHIO
Export Department: Chrysler Bldg., New York 17, N. Y.

TRUSCON
MARK OF MERIT
PRODUCTS

TRUSCON® a name you can build on

LUMBER, TIMBER, PLYWOOD—PER M FT., B.M., CARLOAD LOTS F. O. B.

SHORT LEAF YELLOW PINE AND DOUGLAS FIR

All S. L. Y. P. is No. 2 common or better and for No. 1 N. C. Box. (Prices in Bold Face)

All Fir boards, dimensions, planks No. 2, Fir small timbers and timbers are No. 1 Lengths up to 20 ft.

(Prices in italics)

	1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 s4s	6x12 s4s	12x12 s4s
Atlanta	† **$79.00**	**$82.50**	**$73.50**	**$76.00**	**$79.50**	**$83.00**	**$81.00**	.....	.....
Baltimore	* **91.00**	**95.00**	**78.50**	**78.50**	**78.50**	**85.00**	**112.50**	.....	.....
	102.00g	*102.00g*	*94.00g*	*94.00g*	*94.00g*	*96.00*	*$105.00*	*$105.00*	
Birmingham	† **80.50**	**82.50**	**70.50**	**80.50**	**83.50**	**85.50**	**95.50**	.....	.....
	75.50	*75.50*	*70.50*	*70.50*	*70.50*	*69.50*	*75.50*	*75.50*	*75.50*
Boston	**96.00a**	**99.00a**	**92/96***	**93/98a**	**94/100a**	**91/108a**	.....	.....	.....
	‡ *98.00**	*92.00*	*95.00*	*95.00*	*95.00*	*90/94*	*100.00*	*108.00*	*110.00*
Chicago	** **95.00**	**98.00**	**86/87**	**95.00**	**97.00**	**100.00**	**104.00**	.....	.....
	95.00	*95.00*	*97.00*	*99.00*	*100.00*	*102.00*	*108.00*	*108.00*	*108.00*
Cincinnati	* **91.25**	**97.00**	**81.25**	**90.25**	**97.00**	**99.25**	**113.50**	.....	.....
	104.00	*104.00*	*108.00*	*104.25*	*105.75*	*104.00*	*130.50*	*130.50*	*130.50*
Cleveland	** **92.00**	**94.00**	**87.00**	**93.00**	**95.00**	**98.00**	.....	.....	.....
			92.00	*98.00*	*98.00*	*98.00*	*108.00*	*108.00*	*108.00*
Dallas	†† **70.00**	**79.00**	**76.00**	**66.00**	**66.00**	**64.00**	**117.00**	.....	.....
Denver	* *Not in stock*		*101.00*	*101.00*	*101.00*	*102.00*	*122.00*	*138.00*	*140.00*
Detroit	‡ **110.00**	**115.00**	**100.00**	**110.00**	**113.00**	**115.00**	.....	.....	.....
	91.50	*93.50*	*93.50*	*94.50*	*88.25*	*88.00*	*108.50*	*118.00*	*118.00*
Kansas City	* **107.50**	**107.50**	**102.50**	**105.00**	**108.00**	.....	.....	.....	.....
	105.00	*105.00*	*105.00*	*105.00*	*105.00*	*107.50*	*130.00*	*130.00*	*130.00*
Los Angeles	‡ *85.00*	*85.00*	*85.00*	*85.00*	*85.00*	*85.00*	*113.00*	*113.00*	*113.00*
Minneapolis	# *135.00*	*135.00*	*135.00*	*135.00*	*135.00*	*135.00*	*135.00*	*135.00*	*135.00*
Montreal	ab**90.00**	**92.00**	**92.00**	**92.00**	**102.00**	.....	.....	.....	.....
	165.00	*165.00*	*165.00*	*165.00*	*165.00*	*165.00*	*165.00*	*165.00*	*165.00*
New Orleans	† **100.00**	**100.00**	**92.50**	**85.00**	**90.00**	**94.00**	**118.00**	.....	.....
	† *97.00*	*101.00*	*109.50*	*109.50*	*107.50*	*107.50*	*107.50*	*117.50*	*107.50*
New York	‡ **106.50**	**109.00**	**112/115**	**117/122**	**117/122**	**122/127**	**150/160**	.....	.....
			Range from $117.00 to $122.00				*135/150*	*145/155*	*145/155*
New York	** **87.00**	**89.00**	**72.00**	**87.00**	**89.00**	**91.00**	**120.00**	.....	.....
	88.00	*88.00*	*91.00*	*91.00*	*91.00*	*91.00*	*100.00*	*110.00*	*110.00*
Philadelphia	‡		**Range from $110.00 to $127.00**				**110/127**	.....	.....
			Range from $120.00 to $150.00				*130/140*	*150.00*	*150.00*
Pittsburgh	†		**Range from $90.00 to $95.00**				**110/120**	.....	.....
			Range from $110.00 to $130.00				*130/140*	*140/155*	*140/155*
St. Louis	#c**110.00e**	**112.00e**	**98.00d**	**105.00d**	**114.00e**	**115.00e**	.....	.....	.....
			108.00f	*114.00e*	*114.00e*	*115.00e*	*152.00e*	*162.00*	*177.00*
San Francisco	A† *88.00*	*85.00*	*89.00*	*89.00*	*89.00*	*88.00*	*88.00*	*88.00*	*88.00*
Seattle	† *75.00*	*75.00*	*75.00*	*75.00*	*75.00*	*75.00*	*85.00*	*85.00*	*85.00*

	2x12 s4s	12x12 s4s
LONG LEAF Y. P. Merchantable grade up to 20 ft.		
	$155.00	**$155.00**
	115.50	**155.50**
	.....	.....
	.....	.....
	132.00	**132.00**
	134.50	**134.50**
	.....	.....
	.....	.....
	96.00	**117.00**
	.....	.....
	.....	.....
	.....	.....
	.....	.....
	.....	.....
	220/250	**220/250**
	190.00	**190.00**
	210/220	**210/220**
	110/120	**115/125**
	.....	.....
	.....	.....

PLYWOOD Rail freight increment (See note for base price)	⅜"	½"
	$22.32	$27.24
	25.92*	31.60*
	21.78	26.58
	.....	.....
	25.92*	31.60*
	.....	.....
	22.45*	27.37*
	25.00*	30.48*
	.....	.....
	25.37*	30.93*
	.....	.....
	18.72	22.80
	13.92	16.98
	25.00*	30.48*
	.....	.....
	.....	.....
	16.56	20.16
	.....	.....
	.....	.....
	16.61*al	20.25*a
	19.89*	24.25*
	.....	.....
	.....	.....
	18.72	22.80
	.....	.....
	.....	.....
	25.92*	31.60*
	.....	.....
	.....	.....
	25.92*	31.60*
	25.92*	31.60a
	.....	.....
	18.72	22.80
	.....	.....
	12.22*a	14.91*a

† F.o.b. mill. * F.o.b. city, CL, out of yard. ** F.o.b. city, CL, direct mill shipment. ‡ Deliv. to contr. CL. 1. Retail, LCL, at yard. # Retail, LCL, deliv. 2. Deliv. truck lots. 3. aad.

LUMBER: **Bold Face type, Southern Pine.** *Italics, Douglas Fir.* *a* Spruce *b* Tax exempt. *c* 5M lots. *d* 8–12 ft. lengths. *e* 8–16 ft. lengths. *g* No. 1 common. *i* 8 ft. lengths. *k* No. 3 common. *n* ¼ #1, ¼ #2 & ¼ #3.

A Rail freight rate from Northwest mills to San Francisco are $11.50 to $15.00 per M ft bm. From Northern Calif. mills $9.00 by rail, $9.50 by truck. All rates for surfaced stock. For rough, add $3.00 to above figures.

PLYWOOD: Plyform grade Fir Plywood, 4' by 8' panels, 5-ply, sanded 2 sides, water resistant glue, carload lots, delivered per 1,000 sq. ft. surface. Seattle base price on ¼", $159.00; on ½", $181.00. Exterior plyform ¼" $179.00, ½" $203.00. For other centers add rail freight increment from table on proper size Oiling and edge sealing charges included. *a* Lower rate by water shipment *b* 50,000 lb. minimum.

* Incl. new freight rates. Rates for other cities not avail. as we go to press.

GLASS, EXPLOSIVES, CHEMICALS

	WINDOW GLASS: Discounts from jobbers list, Feb. 1, 1950a Single or Double Thickness A quality	B quality	EXPLOSIVES: Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots*
Atlanta	79%	80%	$0.2365
Baltimore	78%d	80%d	.2365
Birmingham	83%	83%	.1840
Boston	77–10%	77–10%	.2365
Chicago	76%	76%	.2365
Cincinnati	78%	78%	.2365
Cleveland	78–10–10%	78–10–10%	.2765
Dallas	75%	75%	.2440
Denver	79%	79%	.2415
Detroit	78–10–10%	78–10–10%	.2365
Kansas City	80–10%	80–10%	.2415
Los Angeles	73%	78%	.2390
Minneapolis	75–10%	75–10%	.2415
Montreal	40–5%bc	40–10–5%b	21.35i
New Orleans	78%	77%	.2415
New York	80–10%	80–10%	.3975g
Philadelphia	78%	80%	.2365
Pittsburgh	82%	82%	.2090
St. Louis	80–10%	80–10%	.2415
San Francisco	70%	70%	.2365
Seattle	73%	76%	.2390

Price of 60% Ammonia Gelatin is $0.15 per lb. higher than 40%

Glass; *a* Jobbers' list price per box, 14 x 20, sx, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. *b* Discount from list, Apr. 1951; sales tax included, but 6% tax exemption not allowable for. *c* Single thickness. *d* Discount 6/15/52.

Explosives; * Urban prices influenced by service charges or local storage and delivery regulations do not consistently reflect quantity prices in less congested areas. *g* In borough of Kings, Queens, and Richmond and in Manhattan south of Canal St., add delivery charge of $20.00 per trip. *h* F.o.b. Beloeil (near Montreal), per 100 lb. forcite, 40%. Forcite 60%, $23.15.

40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Seismograph Grades)

	C/L 20,000 lb. net	Tons	200 lb. lots
E. of the Miss., except Fla. and Me.	$0.184	$0.2165	$0.2365
W. of Miss. to Rocky Mtn. States, Fla. and Maine	.189 –.1965	.2215–.229	.2415–.249
Rocky Mtn. States	.189 –.2015	.2215–.229	.2415–.254
Pacific N. W. States	.1855–.199	.219 –.2315	.239 –.2515
Pacific S. W. States	.184 –.1915	.2165–.219	.2365–.2415

PILES, TIES F. O. B.

PILES

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

Dimensions	Points	Length	By Rail: Pine*	Fir
12-in. at butt	6-in.	30 to 50-ft.	$0.51	....
12-in.— 2-ft. from butt	6-in.	50 to 59-ft.	.54	....
12-in.— 2-ft. from butt	6-in.	60 to 69-ft.	.58	....
12-in.— 2-ft. from butt	6-in.	90 to 100-ft.	....	....
13-in.— 2-ft. from butt	5-in.	91 to 100-ft.	....	....
14-in.— 2-ft. from butt	6-in.	50 to 69-ft.	.50/.66	....
14-in.— 2-ft. from butt	6-in.	70 to 79-ft.	.78/.83	.93
14-in.— 2-ft. from butt	5-in.	80 to 85-ft.	.83/.93	.94
14-in.— 2-ft. from butt	5-in.	85 to 89-ft.	....	1.00
14-in.— 2-ft. from butt	5-in.	90 to 100-ft.	....	1.02

* Pine piling over 80-ft. available only in limited quantities.

RAILWAY TIES

Prices f.o.b. per tie for carload lots:		6"x8"x8' Untr.	6"x8"x8' Tr.	7"x9"x8'6" Untr.	7"x9"x8'6" Tr.
Boston	Oak††	‡	....	....	....
	Pine	‡	....	....	....
New York	S. L. Sap Pine	$2.55	$4.35	$3.45	$5.45
	Mixed Oak	3.10	4.65	3.70	5.95
Birmingham	Hardwood	2.40	3.85a	2.85	4.58a
Chicago	Red Oak	....	3.40a	....	4.30/4.40a
Los Angeles	Douglas Fir	....	....	....	....
	Redwood	....	....	....	....
Philadelphia	Red Oak	2.55	3.90	3.45	5.10
St. Louis	White Oak	3.10		3.90	
	Red Oak	3.00	3.75a	3.70	4.60a
	Sap Pine or Cypress	....	3.55a	....	4.50a
San Francisco	Douglas Fir	2.15e	3.15af	2.90bf	4.25eaf
Montreal	Birch or Maple	....h	....h	....h	....h

Tr.— Treated; Untr.— Untreated. *a* Creosoted. *b* 7" x 9" x 8'. *e* Empty cell. *e* Green. *f* F.o.b. cars. *h* No constant price available. *i* Not available.

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb	$5.02
Chlorine cylinders, liquid, per lb. f.o.b. works	.0825
Calcium chloride, 77–80%, flaked, 100-lb. paper bag, f.o.b. works, ton	27.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb	2.30
Soda ash, 58%, in paper bags, per 100 lb. dense	1.75
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	1.85
Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works	10.35

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE — PARTITION — SCORED			STRUCTURAL CLAY TILE — LOAD BEARING — SCORED			BRICK		LIME		
	Per M. lots of 2,000 pieces or over, 3x12x12 in.	4x12x12 in.	8x12x12 in.	Per M. lots of 2,000 pieces or over, 8x12x12 in.	10x12x12 in.	12x12x12 in.	Per M. in quantity Common backing	Straight hard	Per ton, In paper, Carload lot. Hydrated finishing	Common hydrated	Pulverized, or lump
Atlanta	$195.00	$207.00	$247.00	$327.00	$342.00	$381.50	$27.38	$27.38	$19.00	$17.50	$.....
Baltimore	186.00	198.35	372.00	421.50	549.00	627.00	36.00k	41.00k	32.00	21.50	.....
Birmingham	126.00p	136.00p	.....	284.00p	.....	.....	23.50ff	28.00gg	29.25	17.30	.....
Boston	196.00†	209.00†	392.00†	383.25†	.....	.....	36.85p	39.85p	30.00†	28.00†	.....
Chicago	135.00	145.00	280.00	.....	.....	.....	26.00	28.00	30.80	26.00	.....
Cincinnati	185.00j	195.00j	260.00jdd	.....	.....	.....	45.00j	46.00j	26.00j	26.00j	.....
Cleveland	170.00**	181.00**	.....	.....	.....	.....	34.50	34.50	28.25	23.25	32.00ee
Dallas	.....	118.00	.....	.....	.....	.....	19.75	35.25	32.00	21.80	.....
Denver	.....	.....	.....	.....	.....	.....	34.00	41.00	34.80hh	28.00hh	34.00hh
Detroit	130.00	138.00	259.00	.....	317.25	362.60	37.25cc	35.60cc	33.50	29.50	.....
Kansas City	127.50	147.50	270.00	270.00	340.00	400.00	28.50	.....	32.00	26.00	28.50
Los Angeles	r	r	r	r	r	r	27.50ij	.....	34.00	34.00	35.00
Minneapolis	175.00p	196.00p	407.00p	196.00wp	.....	.....	35.00vp	45.00	39.00hhz	29.00hhz	41.00hhdd
Montreal	165.00qq	181.00ss	325.00ss	230.00	248.00	.....	38.50	45.00	34.80	32.50	26.00u
New Orleans	170.00	170.00	310.00	380.00	.....	.....	31.00	.....	.....	28.00	28.00
New York	140.95kk	150.30kk	206.70ckk	225.50kn	.....	.....	37.00	.....	36.00	32.00	.....
Philadelphia	148.30	158.00	290.60	348.70	.....	.....	30/34	35/42	25.00	23.00	2.97
Pittsburgh	112.00	117.00	189.00	216.00	279.00	317.00	36.00	46.00y	25.00	23.00	2.97m
St. Louis	142.00ee	160.00ee	319.00ee	465.00ee	439.00	621.50	40.00nl	36.00s	.90aaa	.75aaa	1.25aaapp
San Francisco	156.85a*	177.10a*	235.30ddd*	.....	.....	.....	37.00	.....	26.60	26.60	2.65m
Seattle	223.00ee	230.00ee	.....	240.00eevv	.....	.....	34.00s	49.00s	42.00aaii	37.50ij	3.90mii

† F.o.b. yard Roxbury. a Smooth. b Per 50 lb. bags. c 6 x 12 x 12 in.-3 cell. d Pulverized hot. e 5%, 10th following month. g 5½ x 8 x 12. h F.o.b. trucks, job site N.Y.C. j Truck load or over. k $1.00 discount l Red face. m Per bbl., 180 lb. n 7½ x 7½ x 12. 8speed title. p Truck lots. q Provincial and Municipal tax extra. r Not used because of earthquake danger. s 2% discount for cash. t 5½ x 8 x 11¼. u Tax exempt. v Sand lime. w 5 x 8 x 12. y Stacked. z Pebble lime price per 80 lb sack. aa Price per sack. Lime not sold per ton. bb LCL. cc Truck delivery. dd 6 x 12 x 12. ee Pebble lime. ff 80% common. gg Select. hh LCL. ii F.o.b. yard. jj Per ton price, no liner. ** Warehouse delivery. * F.o.b. Stockton.

PAINT, ROOFING—F.O.B. CARLOAD LOTS

	RED LEAD	WHITE LEAD	READY-MIXED PAINT			ROOFING SUPPLIES Carload lots f.o.b. factory				
	Per 100 lb. in 600-lb. (Approx.) bbl. Dry a	Per 100 lb. in 100 lb. cases in oil w	Per gal., drums Graphite b	Aluminum c	Ferric Oxide d	Rolls, slate surfaced, 55-90 lb. per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb.	Asphalt coating per gal.	Tar pitch 360 lb. bbl. per ton
Atlanta	$16.25	$28.275	$3.26	$3.51	$3.01	$2.74	$3.01	$2.98	$0.405	$39.75
Baltimore	16.00	27.90	2.75	4.25	3.35	2.66	4.43	4.43	.47	45.56
Birmingham	16.25	28.275	3.90	3.40	.....	2.93	2.93	2.93	.....	42.00ee
Boston	16.00	27.90	.....	.....	.....	2.98qq	3.03qq	3.03qq	.42g	48.50q
Chicago	16.00	27.90	.....	.....	.....	3.29tu	3.29to	3.29to	38.00tbbr	48.00t
Cincinnati	16.00	27.90	..	.....	.....	2.66	2.735	2.735	.46y	47.85
Cleveland	16.00	27.90	2.42ppq	2.60qq	2.76qq	2.97q	2.91o	2.91o	.43y	40.70kk
Dallas	16.25	28.65	.....	4.05	.....	3.50q	3.75o	4.35o	.36	58.50kk
Denver	16.50	28.40	3.29	5.15	3.04	2.66	2.61o	2.81o	.43ff	47.00
Detroit	16.00	27.90	2.35	3.25	2.50	2.97	2.85j	2.91	.53	44.00
Kansas City	16.00	28.65	.....	2.71ys	2.65	3.40	3.20o	3.20o	.43	53.00
Los Angeles	16.00	28.15	3.30*	4.50*	4.20*	2.63*	1.70cc	1	.58*	1
Minneapolis	16.00	29.80/28.02	.....	.....	.....	2.74idd	2.74hidd	2.74hidd	.44hidd	42.00v
Montreal	.....	21.15	2.95pll	4.05qll	3.25rll	4.85f	3.65f	3.65f	1.24f	3.78h
New York	16.00	27.90	.....	.....	.....	2.79ep	2.74ep	2.74ep	.44ez	42.00*
Philadelphia	16.00	27.90	3.25	3.65	3.15	2.54	2.94	2.94	.37	26.00
Pittsburgh	16.00	27.90	2.65	2.85	3.15	2.95	3.10o	3.10o	.35	45.00
St. Louis	16.00	27.90	.....	.....	.....	2.65	2.74h	2.74h	.42y	42.50
San Francisco	16.00	28.15	2.40	.....	3.40	2.95	4.00aa	.....	.49	.....
Seattle	16.00	28.40	3.07m	2.93m	.....	3.58mgee	3.05hmee	.....	.59mee	52.00jm*

‡ Delivered. Note: Red lead in oil 50c higher than white lead in oil. a Red lead prices change frequently due to pig lead price changes. b U. S. War Dept. Spec. 3-49A. c ASTM Spec. D266-31. d 90% minimum ferric oxide. e 15 lb. f Per 432 sq. ft. g F.o.b. yard, Roxbury. h Per roll. 65 lb. i Net carload lot prices; Minneapolis and vicinity. j Asphalt pitch. k Per cwt. l Not used. m 1% discount for cash. n F.o.b. city. o Per 60-lb. p 5-drum, 50 gal. ea. q Per 90-lb. roll. r F.o.b. factory Chicago. s 466 Med. t Federal tax included. u Per 90 lb. square. v Per ton. w Price to large paint contractors is $1.25 less. x Mineral surfaced. y 55-gallon container. z Drums. aa Approximate cost per 100 lbs. bb Roofers coating and cement. Price per ton. cc LCL, truck delivery. dd 2% cash discount. ee Asphalt, in 100 lb. package. ff 5-gal. drums. gg F.o.b. factory. hh Incl. freight. *D, Std Black. E Ready-mixed. F. Over 80% ferric oxide. * Aver. wt. approx. 425 to 550 lbs. drum. ‡ Freight allowed to destination not exceeding .50 cwt.

SKILLED AND COMMON WAGE RATES—PER HOUR

	Brick-layers	Car-penters	Struct. Iron Workers	Hoisting Engineers	Plas-terers	Electrical Workers	Steam-fitters	Common Labor Building	Common Labor Heavy Const.
Atlanta	$3.10	$3.50	$2.75	$2.50	$2.90	$2.75	$2.90	$1.28	$1.28
Baltimore	3.20d	2.75	3.275f	3.10/3.25	3.075f	2.975	2.975M	1.675f	1.675f
Birmingham	3.15	2.40	2.825h	2.245	2.62	2.875	2.875h	1.30	1.40
Boston	3.185r	2.75	3.15r	3.20	3.20r	3.13M	3.10d	1.99r	1.99r
Chicago	3.40k	3.15r	3.20m	3.00m	3.525r	3.37f	3.24r	2.35h	2.35h
Cincinnati	3.225	2.875	2.99h	2.75/3.00	3.10	3.12M	3.175h	2.02	2.02
Cleveland	3.25f	3.20d	3.20f	3.20	3.20	3.20	3.20r	2.45	2.45
Dallas	3.80	2.625	2.75	2.75	3.437	2.90	2.90	1.40	1.40
Denver	3.80	2.775	2.75	2.705	3.30	3.00	2.97	1.80	1.80
Detroit	3.33r	3.08r	3.23r	3.23r	3.32f	3.22M	3.15h	2.28r	2.28r
Kansas City	3.625	2.675	2.805	2.64/2.805	3.25	2.987r	3.075h	1.98	1.98
Los Angeles	3.285g	2.70	2.925h	2.87	3.437g	3.10	3.225r	2.05	2.05
Minneapolis	3.125	2.70	2.82	2.65	2.90m	3.00m	2.875	1.95	1.95
New Orleans	3.05	2.42	2.80m	2.60	2.625	2.925h	2.75r	1.375	1.375
New York	3.874hr	3.575j	3.975r	3.84j	4.154	3.63aar	3.815pL	2.415P	2.415P
Philadelphia	3.62i	3.10	3.51iM	2.875/3.625	3.59r	3.55m	3.515r	1.875	2.175
Pittsburgh	3.475h	3.20h	3.475h	3.325h	3.30r	3.35	3.00	2.025h	2.025h
St. Louis	3.62c	2.975h	3.025h	3.05	3.25h	3.28c	3.05M	2.005h	2.005h
San Francisco	3.4755kk	2.905h	3.075h	2.66	3.45aah	3.225h	3.275K	2.075h	2.075h
Seattle	3.30	2.75d	2.78	2.78	3.15	2.925	2.95	2.25	2.35d
Montreal*†	2.00	1.80	1.80	1.70	2.00	1.90	1.90	1.25	1.25

* Cost of living bonus now included in basic wage. ‡ Includes 5¢/hr tool replacement. † Plus 2% vacation pay.

a 6 hr. day. b 7 hr. day. c Incl. 3% vac. stamp fund plus 7¢ WF for bricklayers; 4% VF for electricians plus 8¢ WF, 1% PF. d Incl. 10¢ H&WF. e Incl. 6¢ H&WF. f Incl. 6% WF. g Incl. 11½¢ WF. h $2.625 homes & housing plus 7½¢ WF. i Incl. 12¢ WF and 15¢ PF. j Incl. 10½¢/hr WF. k Incl. 7½¢/hr. WF. l Incl. 4% VF. m Incl. 5¢/hr WF. n Incl. 20¢ H, W, Ins., Vac. & Retirement. o Incl. 10¢ PF, 8¢ WF. p Incl. 3% WF, 3% PF. q Incl. 3½% WF and 20¢ PF. r Incl. 5% W&PF, 4% VF, 1% NC, 6 PH. Incl. 7½¢ H&WF. s Incl. 13½% WF. t Incl. 10¢ WF. u Negotiating. v Incl. 8¢ WF. w Incl. (22½¢ WF. x Incl. 7½¢ IF, 5¢ H&WF. A Incl. 15¢ WF, 15¢ PF & 20¢ B.F. B Incl. 3% WF. C Incl. 2½¢ H&WF. D Plus 5% WF, plus travel pay per day. E Plus $4/per day Annuity contrib. G Incl. 11¢ H & WF. H Incl. 7¢ WF. I Incl. 15¢ H&WF. J Incl. 5% WF, 6PH. K Incl. 10¢ H&WF 10¢ VF, 2½% PF. L Incl. 3% WF, 3% PF, 2% VF, 1% EF. M Incl. 7½¢ PF. N Incl 1% WF O Incl 2% WF, 1% PF. P Incl. 5% WF, 6 PH. R Incl. 12¢ WF and 1¢ apprentice. S Incl. 12½¢ H and WF.

MEXICO CITY PRICES

In Pesos, F.o.b. City		Nov. '53	Dec.' 53
Common Wages—Building (8 hr. day) (Peons)	av. per hr.	.84	.84
Common Wages—Heavy Const. (8 hr. day) (Peons)	av. per hr.	.84	.84
Skilled Labor Wages			
Carpenters (8 hr. day) 1 cl.	av. per hr.	1.88	1.88
Bricklayers (8 hr. day) 1 cl.	av. per hr.	1.88	1.88
Struct. Iron Workers (8 hr. day) Remachadores.	av. per hr.	1.13*	1.13*
Struct. Steel Shapes 3"-15" x 12 meters	per metric ton	1224.23	1224.23
Reinf. Steel, Corr. Rods			
½" x 11 meters	per ton	1250.00	1250.00
⅝" x 11 meters	per ton	1240.00	1240.00
¾" x 11 meters	per ton	1230.00	1230.00
⅞" x 11 meters	per ton	1220.00	1220.00
1" x 11 meters	per ton	1220.00	1220.00
1" x 11 meters	per ton	1220.00	1220.00
Gravel truck load of 3½ cu. meters			
Blue Gravel	per tr. load	60.00	60.00
Rose Gravel	per tr. load	55.00	55.00
Cement, Std. Port. (Toltees)	per ton	180.00	180.00
Lumber			
Mex. Sacred Fir (OYAMEL)	per M ft.	750.00	750.00
1st Class Pine	per M ft.	1350.00	1350.00
2nd Class Pine	per M ft.	1100.00	1100.00

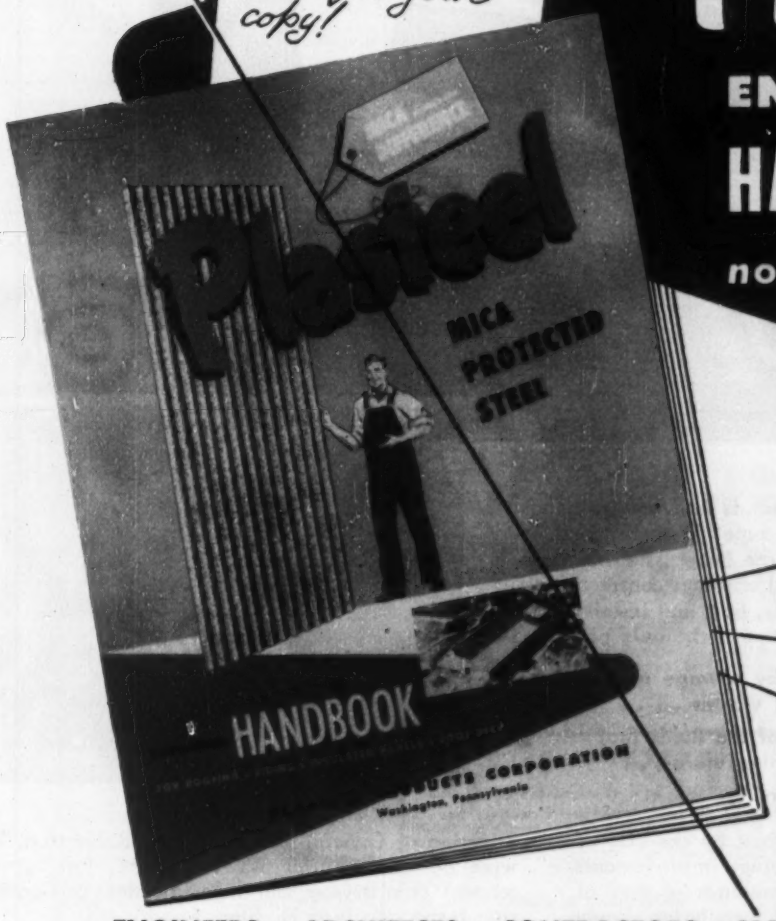
* 1st & 2nd fl. add 40% ea. addn'l floor over preceding one

ENR Skilled Average: (Bricklayers, Carpenters, Iron workers): $3.095 **ENR Common Average:** $1.944.

NEW Plasteel ENGINEERS' HANDBOOK now available

MEMO

Write for your copy!



ROOFING and SIDING

ROOF DECK

INSULATED PANELS

ENGINEERS • ARCHITECTS • CONTRACTORS • MAINTENANCE MEN

This New Engineers' Handbook is a valuable construction guide for the use of Plasteel Products. Complete instructions and specifications—fully illustrated to simplify the efficient and economical erection of Plasteel—the only protected metal roofing and siding with Mica advantages!
Mica does make a big difference!

PLASTEEL PRODUCTS CORPORATION
Washington, Pennsylvania

PLASTEEL PRODUCTS CORPORATION
Washington, Pennsylvania

Please Rush New Plasteel Engineers' Handbook

Name..... Title.....

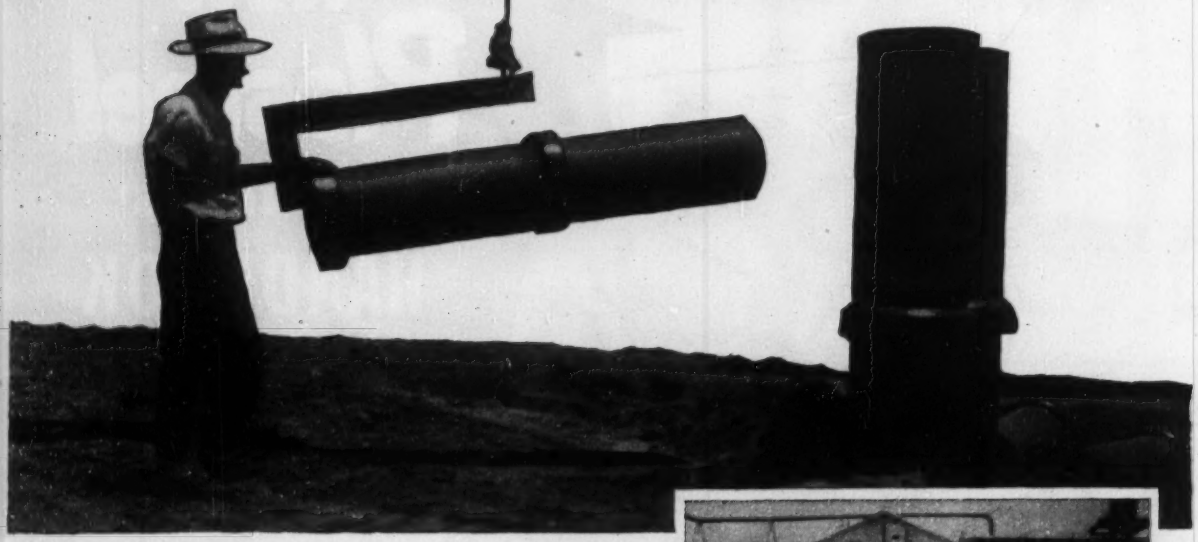
Company.....

Address.....

City..... State.....

When Sewerage Projects are Bond-Financed...

Look for Vitrified CLAY PIPE



When a municipal sewerage project is financed by bonds that won't mature until 1993, the pipe has to be good. It *must* not fail—especially before the bond issue has been retired. That's why city officials and sewerage contractors all over the country confidently specify, buy, and install Vitrified Clay Pipe. They know Clay Pipe is the *only* pipe . . .

- **Completely unaffected by sewage acids and corrosive industrial wastes . . .**
- **Sure to last regardless of the fluids that may flow through it in the future . . .**
- **Guaranteed for 50 years!**

The $27 million bond issue launched by the city of Miami will cover long-needed sewerage improvements that will require hundreds of thousands of feet of Vitrified Clay Pipe. In the 79th St. installation shown here—a small part of the overall project—some 12,000 feet of Clay Pipe were installed. City of Miami officials who directed various phases of this project are: Engineer Arthur E. Darlow, Inspector Frank Allen, and Supervisor of Sewer Design W. B. Lewis. Under the direction of General Contractor Joe Reinertson, Inc., were Design Engineer W. T. Eefting, Job Superintendent Tom Bryson, and Superintendent of Construction Inspection Fred Righter.

Vitrified
CLAY
PIPE

NATIONAL CLAY PIPE MANUFACTURERS, INC.
1520 18th St. N. W., Washington 6, D. C.

206 Connally Bldg., Atlanta 3, Ga.
100 N. LaSalle St., Rm. 2100, Chicago 2, Ill.
703 Ninth & Hill Bldg., Los Angeles 15, Calif.
311 High Long Bldg., 5 E. Long St., Columbus 15, Ohio

C-154-1

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. O. WETZEL, L. M. WINISKI, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

▲† Mass., Bedford—AIRFIELD PAVEMENTS, UTILITIES—B.A. On Or About 2/11—U. S. Eng., 857 Commonwealth Ave., Boston, Zone 15, airfield pavements, utilities, Laurence G. Hanscom Air Force Base, ENG-19-016-54-25, approx. $5,000,000. Plans deposit $25.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† Earl Brown, Inc., 11 Hanover St., Malden, Mass. LB $134,500, est. $140,000. married officers and married enlisted men's quarters, Naval Air Station, Spec. 31258, Rev. 2, NOY 29604, BRUNSWICK, ME. Dist. P. Wks. Office, 495 Summer St., Boston, Mass. Bids Dec. 15. CD 12/8.

† Contg. Office, Limestone Air Force Base, Limestone, Me., rejected bids Nov. 20, modify Luria Wing hangars, IFB 17-600-54-5, LIMESTONE, ME. CD 11/12.

BUILDINGS

LOW BIDS AND CONTRACTS

Donatelli Constr. Co., 118 Cottage Ave., Cumberland, R. I., LB $469,175. elementary SCHOOL, Manville and Mendon Rds., CUMBERLAND, R. I. Town, Town Hall, Broad St., Valley Falls, R. I. Bids Dec. 16. CD 12/8.

C. Sullivan Co., Inc., 15 Clinton St., Newport, R. I. GA $300,000. CONVENT, NEWPORT, R. I. St. Augustin's Convent, Harrison Ave., Newport, R. I. Bids Nov. 20. CD 11/18.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

New Jersey—PLANTING—B.A. 1/14—New Jersey Hy. Auth., State Hy. Dpt. Office Bldg., 1035 Parkway Ave., Trenton, Garden State Parkway. Contract 114, Section 4, planting between Burke Parkway and Vaux Hall Road (Rte. U.S. 22-Interchange Area) Union Twp., Union Co. Plans deposit $10.

† N. Y., Pine Lawn—ROADS—B.A. 2/3—U. S. Eng., 80 Lafayette St., New York Zone 13, roads in Long Island National Cemetery. $100,000.

▲† N. J., Newark—AIRPORT FACILITIES—B.A. 4/22—U. S. Eng., 80 Lafayette St., New York, 13, N. Y. air national guard facilities at Newark Airport, $1,000,000-$3,000,000. Severud, Elstad & Kreuger, 415 Lexington Ave., New York, 17, N. Y., engrs.

BIDS ASKED—BUILDINGS

Md., Upper Marlboro—SCHOOLS—B.A. 1/12—Prince Georges Co., Dpt. Educ., Woodridge Elementary School, Glenridge, Morningside Elementary School, Morningside, $450,000. Plans deposit $50, Harden & Dressel, Glen Burnie, archts. CD 11/25.

▲ N. J., Ancora—ADMINISTRATION, etc.—B.A. 1/12—Div. Purchase & Property, State House, Trenton, administration and senile bldg., N. J. State Hospital. CD 3/2.

N. Y., East Meadow—MAINTENANCE—B.A. 1/19—Bd. Supervs. Nassau Co., Old County Court House, Mineola, Contr. 1029-B-1-4. maintenance bldg., $135,000.

Pa., Elizabeth—SCHOOL—B.A. 1/20—Elizabeth-Forward Joint School Auth., Elizabeth, 1 story, basmt. 59x195 ft. and 29x165 ft., L-shaped Wm. Penn Grade School, Williamsport Rd., Forward Twp., near here. $560,000. Plans deposit $25. Hunter, Caldwell & Campbell, 3603 Fifth Ave., Altoona, archts. CD 3/22/48.

▲† N. Y., Fort Terry—LABORATORY—B.A. 2/16—U. S. Eng., 80 Lafayette St., New York 13, laboratory bldg. $5,000,000. Vitro Corp., 233 Broadway, New York, archt.

† N. Y., Romulus—VACUUM PROD. BLDG., etc.—B.A. 3/2—U. S. Eng., 80 Lafayette St., New York Zone 13, vacuum prod. bldg. and barricade, FY 53, Seneca Ordnance Depot. $100,000. John C. Ehrlich, 22 Seneca St., Geneva, archt.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ † Savin Constr. Co., 10 Village St., East Hartford, Conn., LB $7,669,197, Schedule 1;
Fred Raff Co., 271 Sheldon St., Hartford, Conn., LB $1,127,970, Schedule 2;
T. C. Bateson Constr. Co., Irwin-Kessler Bldg., Dallas, Tex., LB $7,777,010, Schedule 3;
Charles H. Tompkins Co., 907 16 St., N.W., Wash., D. C., J. A. Jones Constr. Co., 209 W. 4 St., Charlotte, N. C., and D. W. Winkelman Co., Inc., Jefferson Bldg., Syracuse, N. Y., LB $17,227,534, combined bid for airfield facilities at Plattsburg Air Force Base, Eng-30-075-54-75, PLATTSBURG, N. Y. U. S. Eng., 80 Lafayette St., New York 13, N. Y. Bids Dec. 22. CD 10/19.

PENNSYLVANIA—State Hy. Dpt., 506 N. Office Bldg., Larry Constr. Co., Inc., 137 Jefferson Dr., Pittsburgh 28, Pa., LB $223,776, repair and surf. Jacks Run Bridge, Fremont St.; Dillworth Run and Spruce Run Bridges in city of Pittsburgh, TR 88, Allegheny Co. Bids Dec. 21. CD 12/4.

▲ PENNSYLVANIA—State Hy. Dpt., 506 N. Office Bldg., Harrisburg,
Bracken Constr. Co., Sligo, Pa., LB $532,131, wid'n. 7.05 mi. to 22 ft. with crushed aggregate base and bit. surf. in vicinity of Corsica Boro and from near Elk-Ashland Twp. line, westerly, U. S. 322, Clarion and Jefferson Counties;
Putman & Greene, Inc., P. O. Box 2012, Fort Wayne 3, Ind., LB $185,535, wid'n. to 22 ft. and variable with bit. surf. 3.39 roadway in Beccaris Twp. and Coalport and Irvona Boros from the Cambria-Clearfield Co. line, northerly, TR 53, Clearfield Co.;
Western Pa. Asphalt Paving Co., P.O. Box 1402, Erie, Pa., LB $189,789, wid'n. pavement 3 ft. for 5.73 mi. and bit. surf. new base and existing pavement, 22 ft. wide in Union City Boro and Union and Amity Twps. from Union City Boro and Kimble Corners, north to a point south of Dorman Corners, U. S. 6, TR 8 and 79, Erie Co.;
Lawrence Sherbine, Box 66, Wilmore, Pa., LB $261,785, wid'n. and overlay existing pavement with crushed aggregate base and bit. surf. 4.37 mi. Leg. Rt. 11054, Chest Twp. near Patton Boro, north to near St. Lawrence Cambria Co.;
E. D. Plummer & Sons, Chambersburg, Pa., LB $695,887, place crushed stone base with bit. surf. variable to 33 ft. wide 5.1 mi. Greene and Southampton Twps. from near Mt. Zion to beyond Green Village, U. S. 11, Franklin Co.;
Herbert R. Imbt, Inc., Box 155, State College, Pa., LB $648,701, wid'n. by 5 ft. and 8 in. and variable and bit. surf. 16.75 mi. in Chestnut Hill, Tunkhannock and Tobyhanna Twps. between Blakeslee Corners and Broadheadsville, T.R. 115, Monroe Co.;
D. T. Connelly, 475 Allison Ave., Washington, Pa., LB $185,351. wid'n. left and right of existing pavement to 22 ft. with crushed aggregate base and bit. surf. 7.59 mi. in Canton, Chartiers and Mt. Pleasant Twps. between Leg. Rt. 545 and Leg. Rt. 62100, TR 18, Washington Co.;
Black Top Paving Co., Oakland Ave., Washington, Pa. LB $241,431, wid'n. left and right of existing pavement to 22 ft. with crushed aggregate base and bit. surf. 10.97 mi. in West Middleton Boro and Independent, Hopewell and Canton Twps. from the West Virginia-Pennsylvania line west to intersection of Leg. Rt. 62104, TR 31, Washington Co.;
Middlecreek Constr. Co., Middleburg, Pa., LB $352,232, wid'n. to 22 ft. and overlay existing pavement with crushed aggregate base and bit. surf. 6.28 mi. in Beavertown and Middleburg Boros and Beaver and Franklin Twps. from Middleburg to Beavertown Boro, U. S. 522, Snyder Co.;
Smith Constr. Co. of Ohio, P.O. Box 515, Vienna, O. LB $153,662, plain concrete base with bit. surf. variable up to 50 ft. in width 0.87 mi. TR 518, City of Sharon, Mercer Co.;
A. B. Cole, Meshoppen, Pa., LB $179,718, wid'n. and surf. 6.05 mi. existing pavement, variable to 30 ft. in New Milford and Great Bend Twps. and Boros from New Milford to Great Bend, north, U. S. 11, Susquehanna Co.;
Burrell Constr. & Supply Co., 1 Fifth St., New Kensington, Pa., LB $92,271, wid'n to 22 ft. and bit surf. new base and existing pavement 3.12 mi. in Donegal and Mt. Pleasant Twps., from near Donegal, northwesterly, TR 31, Westmoreland Co.;
Latrobe Road Constr., Inc., P.O. Box 150, Latrobe, Pa., LB $517,346, wid'n. to 22 ft. and surf. new and existing pavements 6.46 mi. in Conemaugh Twp. from near Ferndale Boro, southwesterly, U. S. 219, Somerset Co. Bids Dec. 21. CD 12/4.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Mellon Stuart Co., 210 E. Park Way N.S., Pittsburgh, Pa., CA $2,000,000, 1 and 2 story approx. 250x250 ft. brick, concrete, steel DISTRIBUTION and WAREHOUSE, PITTSBURGH, PA. Western Electric Co., 195 Broadway, New York, N. Y. Bids Nov. 21. CD 11/11.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

† Va., Chincoteague—SECURITY FENCE—B.A. 1/12—P. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Norfolk, Zone 11, security fence at Naval Auxiliary Air Station and Naval Aviation Ordnance Test Station, NOY 82838, Spec. 42698. Plans deposit $10.

† Ga., Savannah—FACILITIES—B.A. 1/14—U. S. Eng., 200 St. Julien St., Savannah, NGAF facilities, incl. barracks, mess hall addn., electrical distr. sys. water, gas, sewer lines, at Travis Field.

† Va., Norfolk—B.A. 1/19—P. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Zone 11, sanitary sewerage sys., main base at Naval Amphibious Base, Little Creek, NOY 78224, Spec. 37650. Plans deposit $20.

† Fla., Tampa—LABORATORY—B.A. On Or About 1/29—U. S. Eng., P.O. Box 4970, Jacksonville, petroleum testing laboratory, MacDill Air Force Base, about 4 mi. southwest of here. Serial No. ENG-08-123-54-32.

† Louisiana and Arkansas—B.A. 2/16—U. S. Eng., P.O. Box 60, Vicksburg, Miss., Bouef River channel imprv. in West Carroll and Morehouse Parishes, La. and Chicot Co., Ark., incl. 7,900,000 cu. yd. excav. CD 6/26/46, under Louisiana.

BIDS ASKED—BUILDINGS

Va., Peak's Turnout—DORMITORY, etc.—B.A. 1/14—Dpt. Welfare & Institutions, State Office Bldg., Richmond, addn. to Dormitory No. 1 and laundry, cannery at Janie Porter Barrett School for Girls. Plans deposit $25, Merrill C. Lee, 601 E. Franklin St., Richmond, archt.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† L. T. Zoby & Sons, 1082 W. 42 St., Norfolk, Va. LB $248,783, high speed jet refueling sys., Naval Air Station, NOY 80172, OCEANA, VA. P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk, Va. Hayes, Seay, Mattern & Mattern, 163 W. Onley Rd., Norfolk, Va. and Harley, Ellington & Day, Inc., 153 E. Elizabeth St., Detroit, Mich. engrs. Bids Dec. 15. CD 11/17.

▲ Mountain State Constr. Co., 5111½ MacCorkle Ave. S., Charleston, W. Va., LB, $747,773 Sect. 3, Patrick to Vine Sts., 5,400 ft. 60 in. sewer; LB, $272,375, Sect. 4, 3,000 ft. 48 in. sewer, CHARLESTON, W. VA. City, City Hall, Charleston, W. Va. Bids Dec. 18. CD 11/12.

† Duval Eng. & Contg. Co., 1746 E. Adams St., Jacksonville, Fla., LB, $900,558, paving roads Patrick Air Force Base, COCOA, FLA. U. S. Eng., P.O. Box 4970, Jacksonville, Fla. Bids Dec. 15. CD 4/4/51.

P. A. Buchanan, 630 Woodland Ave. S.W., Birmingham, Ala., CA, $199,573, WW imprvs., AUBURN, ALA., City, City Hall, Auburn, Ala. Bids Dec. 17. CD 12/11.

BUILDINGS

LOW BIDS AND CONTRACTS

C. D. Spangler Constr. Co., P.O. Box 3007, Charlotte, N. C., CA $459,000. HIGH SCHOOL, LAURENS, S. C. Laurens Co. Bd. Educ., Laurens, S. C. Bids Dec. 15. Awarded Dec. 16. CD 12/1.

M. J. Shahid, 85 Broad St., Charleston, S. C. Owner Builds. $400,000. 36 RESIDENCES, MOUNT PLEASANT, S. C.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Latin America
Public Buildings
Commercial Buildings
Industrial Buildings
Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
B.A. Bids Asked
ENR Engineering News-Record
CD Engineering News-Record Construction Daily

A STRONG POINT with MARS—

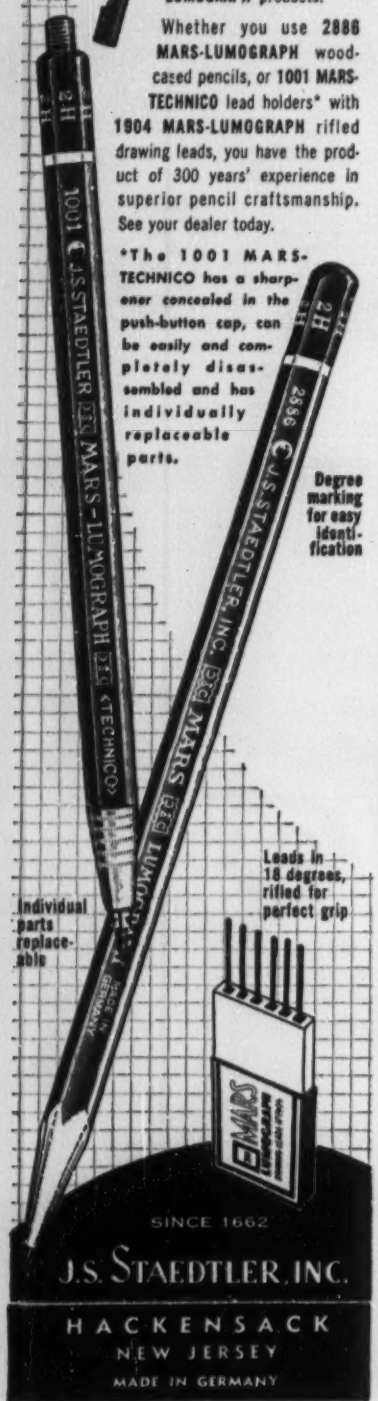
SAVE TIME AND MONEY

Sharpener in push-button head

Save considerable time, money and effort by using imported **MARS-LUMOGRAPH** products.

Whether you use **2886 MARS-LUMOGRAPH** wood-cased pencils, or **1001 MARS-TECHNICO** lead holders* with **1904 MARS-LUMOGRAPH** rifled drawing leads, you have the product of 300 years' experience in superior pencil craftsmanship. See your dealer today.

*The 1001 MARS-TECHNICO has a sharpener concealed in the push-button cap, can be easily and completely disassembled and has individually replaceable parts.



MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

Wis., Fort Atkinson—SWIMMING POOL, etc.—B.A. 1/12—City, swimming pool and bath house, $125,000. Plans deposit $10. Donn Hongen, Wisconsin Rapids, archt. CD 10/27, under LB.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

General Constr. Co., 1221 E. 5 Ave., Columbus, O., LB $220,986. 3,500 ft. sect. Renick Run Storm Sewer to relieve surface flooding on lower West Side, COLUMBUS, O. City, Harry D. Metcalf, Service Dir., City Hall, Columbus, O. CD 11/28/50.

J. M. Corbett Co., 2501 Salt St., Chicago, Ill., LB, $401,293 b. conc. paving 35 St., S. State to Lake Park Ave., CHICAGO, ILL. City, City Hall, Chicago, Ill. Bids Nov. 10. CD 11/11.

R-W Constr. Co., 3218 W. Fond du Lac Ave., Milwaukee, 10, Wis., CA, $305,606, storm sewer in W. Silver Spring Dr., MILWAUKEE, WIS. City, City Hall, Milwaukee, Wis. Bids Dec. 11, awarded Dec. 17. CD 12/3.

Nelson & Co., 1550 Yont St., Racine, Wis., LB, $137,994 enlarging sewage treatment plant, RACINE, WIS. City, City Hall, Racine, Wis. Bids Dec. 15. CD 11/23

▲ MICHIGAN—State Hy. Dpt., Charles M. Ziegler, comr., Lansing.

A. B. Vickery Co. & The Koch Constr. Co., 239 W. Center St., Milwaukee, Wis. LB $560,616, est. $560,000. 44 ft. c. conc., 1.86 mi. water mains, sanitary sewers, US-41, U 55-6 C3 (U173 8), Menominee Co.;

Thornton Constr. Co., Hancock, Mich. LB. $497,144, est. $530,000. stabilized aggregate 6.847 mi. M-64, SS 66-3 C3 R (S 578 1), Ontonagon Co.;

Straits Constr. Co., St. Ignace, Mich. LB $168,202. est. $180,000. stabilized aggregate M 221, SS 17-62 C3-R (S 761 1), Chippewa Co.;

Pierson Contg. Co., 609 Eddy Bldg., Saginaw, Mich. LB $256,961. stabilized aggregate surf. 4.472 mi. M-94 and connecting road, M 2-6 C3-R, SS 2-6 C2-R (S 192 4), Alger Co. Bids Dec. 15. CD 12/8 and 12/1.

BUILDINGS

LOW BIDS AND CONTRACTS

Fred Teitelbaum, 5526 N. Kedzie St., Chicago, Ill., CA, $100,000, 12,000 sq. ft. FACTORY, CHICAGO, ILL. Thompson Mfg. Co., W. 45 Pl. and Packers Ave., Chicago 9, Ill. A. Epstein & Sons Co., 2011 Pershing Rd., Chicago 9, Ill., archts. Awarded Dec. 17.

Becker Constr. Co., 7701 W. Blue Mound Rd., Milwaukee 13, Wis., CA, $175,000, 3 story, bsmnt., 53x285 ft. BOTTLING HOUSE addn., MILWAUKEE, WIS. Miller Brewing Co., 4000 W. State St., Milwaukee, Wis. CD 11/25.

Seizer-Ornst Co., 6222 W. State St., Wauwatosa, 13, Wis., CA, 1 story, bsmnt., 150x150 ft. GARAGE, MILWAUKEE, WIS. Milwaukee Journal Co., 333 W. State St., Milwaukee, 3, Wis. Bids Aug. 11. CD 7/28.

P. J. Nickle Co., P.O. Box 465, Greenwood, Mich. LB $378,116. general contract 44x178 ft. and 41x44 ft., L-shaped HOSPITAL addn., 26x45 ft. CHAPEL, WAKEFIELD, MICH. Divine Infant of Prague Hospital, Wakefield, Mich. Bids Dec. 9. CD 11/19.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† Mo., Grandview—CHAPEL—B.A. 1/13—U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo., chapel at Grandview Air Force Base, Inv. 23-028-54-35. CD 1/22, under LB.

† Okla., Ardmore—CHAPEL—B.A. 1/14—U. S. Eng., Box 61, Tulsa, Zone 2, chapel, Ardmore Air Force Base, Inv. No. Eng-34-066-54-32. $90,000. Extended date. Collins & Floor, McAlester and Ardmore, engrs.-archts. CD 12/8.

† Minn., Duluth—GUARDHOUSE—B.A. 1/26—U. S. Eng., 1709 Jackson St., Omaha, Neb., guardhouse at Duluth Air Force Base, Inv. 25-066-54-47. CD 11/12/51.

BIDS ASKED—BUILDINGS

Kan., Garden City—SCHOOL—B.A. 1/12—Union School Dist. 1, Finney Co., school addn., Holcomb. $325,000. Extended date. J. W. Radotinsky, 1401 Fairfax Trafficway, Kansas City, Kan., archt. CD 12/16.

Ia., Des Moines—WAREHOUSE—B.A. 1/20—Iowa State Liquor Control Comn., 7 and Court Sts., warehouse. $425,000. Tinsley, Higgins & Lighter, 526 Liberty Bldg., archts. CD 9/4.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

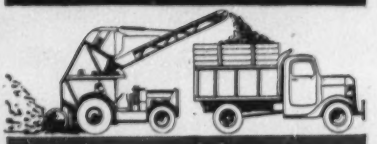
† Todd Shipyards Corp. (Houston Div.), Industrial Rd., Houston, Tex. LB $490,650, intake service gates, frames, dogging devices and intake bulkhead gate for Gavins Point Reservoir Proj., near Yankton, Inv. 25-066-54-96, SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Dec. 17. CD 11/10.

† Empire Electric Co., 1015 W. Rosedale St., Fort Worth, Tex. LB $257,907. apron electrical sys. and supplementary airfield drainage, Forbes Air Force Base, Inv. 23-028-54-30, TOPEKA, KAN. U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo. Bids Dec. 9. CD 11/24.

† Great Lakes Dredging & Dock Co., International Trade Mart, New Orleans, La., LB $95,597. Unit 1, dredging 1,417,000 cu. yd. Texas City Channel and portion

longest trucks

highest trucks



loaded FASTER with a B-G LOADER

GET THE DETAILS. SEND FOR THIS FREE BOOK.

see your B-G distributor or write

Barber-Greene

AURORA, ILLINOIS, U.S.A.

Before you plan Foundations send for this NEW Bulletin

INVESTIGATE FOUNDATION SAVINGS

Industrial Foundations
Airports · Highways
Earth Dams · Levees
Deep Foundations
Concrete Dams

To receive specific information, costs, etc. send us: available soil analysis data, general description of project, any loadings involved, etc.

VIBROFLOTATION FOUNDATION CO.

575 Sixth Ave. · Pittsburgh 19, Pa.

ATlantic 1-2500

of Turning Basin in area State Hy. Ferry Landing of channel to Pt. Bolivar, Galveston Co., Inv. No. CIVENG-41-253-54-39, TEXAS. U. S. Eng., Box 1229, Galveston, Tex. Bids Dec. 11. CD 12/1.

Singleton-Musick Co., Box 2130, Amarillo, Tex., LB $257,807, est. $242,000. 18,000 masonry air terminal remodeling, addn., AMARILLO, TEX. City, City Hall, Amarillo, Tex. Bids Dec. 15. CD 11/25.

▲ **Tellepsen Constr. Co.**, Box 2536. Houston, Tex., CA $2,405,000. sewage treatment plant, BEAUMONT, TEX. City, City Hall, Beaumont, Tex. Bids Nov. 17. CD 11/25, under LB.

Brown & Root, Inc., Box 3, Houston, Tex., LB $79,195, est. $85,000, some concrete curbs and gutters; LB $195,114, concrete type street paving, concrete curbs and gutters, drainage, BROWNSVILLE, TEX. City, Brownsville, Tex. Bids Dec. 10. CD 11/25.

Oaklawn Memorial Park, El Campo, Tex. Own Forces. $100,000, cemetery, water sys., roads, drainage, etc., EL CAMPO, TEX. CD 12/15.

City, City Hall, Galveston, Tex. Own Forces. $55,000, Phase 1, addnl. sect. of water sys. rehabilitation (mains) $70,000, Phase 2, water pumping station imprvs., GALVESTON, TEX. CD 8/21.

O. R. Winter, Developer, 2840 Times St., Houston, Tex. Own Forces. $66,165, sanitary sewers; $60,000, storm sewers, some open drainage, HOUSTON, TEX. CD 12/8.

O. R. Winter, Developer, 2480 Times St., Houston, Tex. Owner Builds. $37,000, c.i. pipe water lines, HOUSTON, TEX.

O. R. Winter, Developer, 2480 Times St., Houston, Tex. Owner Builds. $67,500, street constr. and asph. type paving, concrete curbs and gutters, HOUSTON, TEX.

City, Midland, Tex. Own Forces. $125,000, some c.i. water line exten., MIDLAND, TEX. H. N. Roberts & Assocs., Lubbock, Tex. engrs. CD 7/24/52.

City, Midland, Tex. Own Forces. $85,000, some street drainage and surf. and general repairing, MIDLAND, TEX. H. N. Roberts & Assocs., Lubbock, Tex., engrs.

City, Midland, Tex. Own Forces. $90,000, sanitary sewer lines, MIDLAND, TEX. H. N. Roberts & Assocs., Lubbock, Tex. engrs. Bids Nov. 3.

† **Christy & Baskett**, Builders Exchange, San Antonio, Tex., CA $69,119, est. $85,000, resurfacing hangar line parking area, 56,000 sq. yd. single surf. tr., Randolph Air Force Base, Serial No. 41-606-54-9, RANDOLPH AIR FORCE BASE, TEX. U. S. Govt., c/o Contg. Officer, Box 205, Randolph AFB, Randolph Field, Tex. Bids Nov. 20. CD 11/10.

City, Rockwall, Tex. Purchase and Hire. $60,000, sewage disposal unit, ROCKWALL, TEX. Montgomery & Williams, West Ave., Austin, Tex., engrs. CD 1/27/53.

City, Rockwall, Tex. Purchase and Hire. $39,700, some c.i. water 2- to 2½-in. distr. lines, ROCKWALL, TEX. CD 6/12.

Radio Station KFRD, Rosenberg, Tex., Purchases, Day Labor. $85,000, radio studios and transmitter bldg., ROSENBERG, TEX. Ernest L. Shult, 5009 Fannin St., Houston, Tex., engr.

Panhandle Constr. Co., Box 1500, Lubbock, Tex., LB $63,868, sewer lift station and addnl. rehabilitation work, WHITEFACE, TEX. Town, Whiteface, Tex. Hatfield Eng. Co., Amarillo, Tex., engr. Bids Dec. 4.

Panhandle Constr. Co., Box 1500, Lubbock, Tex. LB $37,115, some new water lines and addnl. rehabilitation work to sys., WHITEFACE, TEX. Town, Whiteface, Tex. Hatfield Eng. Co., Amarillo, Tex., engr. Bids Dec. 4.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Missouri Valley Constructors, Inc., & Winston Bros.**, 1932 Harrison St., Amarillo, Tex., CA $12,000,000 proj., Hales X POWER PLANT addn., Unit 3, AMHERST, TEX. Southwestern Public Service Co., 3rd and Polk Sts., Amarillo, Tex. E. W. Robinson, c/o owner, ch. engr.

Vilbig Constr. Co., 1710 Proctor St., Dallas, Tex. CA $68,175, foundation and earth work only for STUDENT UNION BLDG., DALLAS, TEX. Southern Methodist University, Dallas, Tex. CD 12/9.

▲ **Rambo Constr. Co.**, 2826 Morton St., Fort Worth, Tex., CA $2,352,945, 198,000 sq. ft. brick exterior, rigid steel frame State Tuberculosis HOSPITAL, six ward bldgs. and other allied bldgs., HARLINGEN, TEX. Bd. for Texas State Hospitals & Special Schools, 45 and Lamar Sts., Austin, Tex. Bids Dec. 8. CD 12/11, under LB.

▲ **Farnsworth & Chambers Co., Inc.**, Box 74, Houston, Tex., CA $2,410,000. Burbank Senior HIGH SCHOOL, Irvington Blvd. and Tidwell Rd., HOUSTON, TEX. Houston Independent School Dist., 1300 Capitol Ave., Houston, Tex. Golemon & Rolfe, 915 Woodrow St., Houston, Tex., archts. Bids Dec. 17. CD 12/1/52.

Mischer-Harris Co., Inc., 6925 Navigation Blvd., Houston, Tex., CA $329,117, 16 frame, masonry DWELLINGS, concrete slab fdn.; CA $367,775, 22 frame, masonry dwellings, concrete slab fdn., HOUSTON, TEX. T. G. P.M. Co., Inc., 6925 Navigation Blvd., Houston, Tex. CD 12/11.

Bill Williams, c/o San Antonio Hy., Richmond, Tex. Day Labor, Sub-Contracts. $300,000, large MOTEL proj., rein.-con. swimming pool and bathhouse, RICHMOND, TEX. CD 7/22.

Jaffe & Martin, 4623 Blanco Rd., San Antonio, Tex. Owner Builds. $315,000, 35 frame DWELLINGS, concrete slab fdn.; $339,000, 39 frame, masonry DWELLINGS, concrete slab fdn., SAN ANTONIO, TEX. CD 12/9.

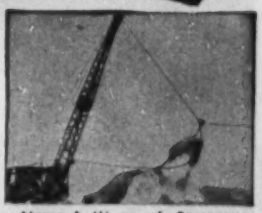
ON YOUR BOOM MACHINE

SAUERMAN SCRAPER

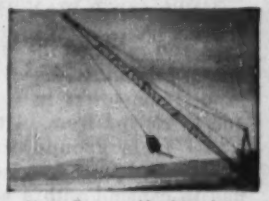
When you add a Sauerman Crescent Scraper to your boom machine as auxiliary equipment, you are making a profitable investment which will repay many times its moderate initial cost. This unique bottomless bucket will, in many cases, handle up to 50% greater load than the regular bucket or clamshell.

On short range work, such as backfilling, grading and similar jobs where material must be moved but does not require lifting, the Crescent is simply cast from the boom tip like the regular bucket. The Crescent bites into the earth wherever it strikes and fills to capacity on the forward pull. The load literally floats along the ground to the discharge point and is deposited when the scraper is raised by the boom line.

When a job calls for digging from a river, deep pit or soft area beyond the reach of the boom, the Crescent Scraper is suspended by chains from a simple trolley that rides on a track cable extending from the boom tip to an anchorage. One drum of the machine raises and lowers this track cable, while the other drum operates the inhaul cable attached to the front of the scraper. Digging, hauling and discharge proceed as in the casting operation. Following discharge the empty scraper is lifted and gravity-returned to the excavation point by merely tightening the track cable.

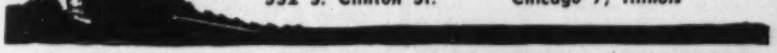


Above: A 1½-cu. yd. Sauerman Crescent used with a 1-cu. yd. dragline is lifted clear of the levee and returns to the borrow pit by gravity at 1500 fpm.



Above: Boom machine has a boom length of 110 feet and uses a 4-cu. yd. Crescent scraper, replacing a 2½-cu. yd. dragline bucket.

Find out how other operators use Crescent Scrapers on their boom machines for greater economy, efficiency and flexibility. Write today for illustrated literature.



SAUERMAN BROS., INC.

532 S. Clinton St. Chicago 7, Illinois

Stang WELLPOINT SYSTEM for KNOW-HOW ENGINEERING SUPERVISION EQUIPMENT to keep jobs DRY

The Stang System has proved its efficiency and economy on both large and small jobs all over the United States. Stang engineering and supervision in planning, installation and operation insures a DRY JOB at all times.

JOHN W. STANG Corporation

New York, N. Y. No. 2 Broadway Tel. Whitehall 3-0565

Omaha, Nebraska 2123 South 56th St. Tel. Walnut 7796

Tacoma, Washington 2339 Lincoln Ave. Tel. Broadway 4362

Bell, California 8221 Atlantic Ave. P. O. Box 631 Tel. Logan 5-7421

HOW TO HANDLE
WET JOBS

AIR BASE
DRAINAGE PROJECT

Charleston, S. C.

Contractor: C. Y. Thomason Co.

WELLPOINT ENGINEERS CUT UNIT COST WAY DOWN

THIS JOB required the laying of 2 miles of 18 in. to 48 in. concrete-pipe storm-sewer in wet trench (depth ranged from 14 to 21 ft). Apart from ground water, the Griffin Wellpoint engineers also had to contend with a sub-soil of erratic nature, necessitating sand filters around most of the points.

• Who'd think such an operation could be rushed through at extremely low unit cost? Yet it was. Thousands of dollars were saved in the installation alone by the use of special slip-on hose-swing joints (showing in photo above.)

• Two wellpoint systems, with 2 different crews, kept working simultaneously, thus drying job "on the double." Was contractor pleased? So much so that both of the wellpoint systems are being permanently retained.

• For "quick-dry"... specify ... Griffin.

GRIFFIN
WELLPOINT CORP.
881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.
In Canada: Construction Equipment Co., Ltd.
Toronto Montreal Halifax

Elmer L. Sharp, Tyler, Tex., CA $675,000, est. $500,000. 9 story (ultimately 17 story) 57,600 sq. ft., exterior of aluminum and white brick trim, steel frame OFFICE, TYLER, TEX. Fair Interests, c/o Fair Foundation Bldg., Tyler, Tex. CD 10/23, under LB.

Jones & Williams Co., c/o owner, CA $412,165. 1 story, concrete, brick SHOPPING CENTER, slab fdn., WACO, TEX. J. & A. Sachs Co., c/o Austin Ave., Waco, Tex. CD 12/16.

▲† **Farnsworth & Chambers Co., Inc.**, Box 74, Houston, Tex., CA $4,574,625. LABORATORY and ADMINISTRATION BLDG., Inv. No. 291-54-5, LOS ALAMOS, N. M. U. S. Atomic Energy Comn., Procurement Sect., Los Alamos, N. M. Bids Dec. 3. CD 12/15, under LB.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **Wash.**, Spokane—PAVEMENT, etc.—B.A. 1/18—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, airfield pavement hardstand stub 39, Fairchild Air Force Base, ENG-45-108-54-98. Extended date. CD 12/11.

† **Oregon**—B.A. 1/27—U. S. Eng., Pittock Block, Portland, two powerhouse fish-channel, water-supply turbines, The Dalles Dam, Wasco Co., CIVENG-35-026-54-65.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **M. M. Sundt Constr. Co.**, 440 S. Park Ave., Tucson, Ariz., LB, $274,200, alert hangar, Davis-Monthan Air Force Base, ENG-04-353-54-33, TUCSON, ARIZ. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Dec. 15.

OREGON—State Hy. Comn., Highway Bldg., Salem,

J. C. Eldon, 3101 N. Columbia Blvd., Portland, Ore., CA $83,940, two concrete overcrossing structures, North Santiam Hy. FAP S-265 (2), Marion Co. R. H. Baldock, c/o owner, engr. Bids Dec. 10.

OREGON—State Hy. Comn., Highway Bldg., Salem, received no bids Dec. 11, 413 ft. concrete bridge, Pacific Hy. FAP FI-161 (21), Lane Co.; 209 ft. concrete structures, Pacific Hy. FAP BF-262 (9), Lane Co. R. H. Baldock, c/o owner, engr.

OREGON—State Hy. Comn., Highway Bldg., Salem,

Bessonette & Graff, Medford, Ore., CA $69,839, 352 ft. concrete overcrossing, Pacific Hy. FAP BFI-131 (15), Jackson Co. Bids Dec. 11. R. H. Baldock, c/o owner, engr. Awarded Dec. 11.

▲† **Guy F. Atkinson Co. & Ostrander Constr. Co.**, 5313 N. E. 101 St., Portland, Ore., LB $18,886,006, est. $20,056,589. powerhouse constr. on The Dalles Dam, Wasco Co., CIVENG-35-026-54-54. OREGON. U. S. Eng., Pittock Block, Portland 5, Ore. Bids Dec. 22. CD 11/5.

† **U. S. Eng.**, 4735 E. Marginal Way, Seattle 4, Wash., cancelled bids to have been opened Jan. 4, tank park facilities, Inv. 54-85, FORT LEWIS, WASH. CD 12/11.

Valley Constr. Co., 7708 Rainier Ave., Seattle, Wash., CA, $223,915, 4 mi. 16- to 36-in. mains and 5 m. g. reservoir, PASCO, WASH. City, City Hall, Pasco, Wash. Bids Dec. 10. CD 12/16, under LB.

Burien Constr. Co., 4126 S.W. 106 St., Seattle, Wash., CA, $114,000, air cargo terminal at Seattle-Tacoma Airport, SEATTLE, WASH. Port of Seattle, Bell St. Terminal, Seattle, Wash. Bids Dec. 10. CD 12/16, under LB.

R. Weist, Yakima, Wash., CA, $72,214, grading, ballasting and mfg. or surf. stockpiling material for county roads in area south of Wapato, YAKIMA, WASH. Yakima Co., County Courthouse, Yakima, Wash. Bids Dec. 16. CD 12/8.

CALIFORNIA—State Div. Hys., P. Wks. Bldg., Sacramento,

Clyde W. Wood & Sons, Inc., P.O. Box 620, North Hollywood, Calif., CA, $503,459, grading, surf. 6.3 mi., wid'ning bridge between Jackson and Pine Grove, Amador Co. Bids Dec. 9. CD 12/18, under LB.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles,

R. E. Hazard Constr. Co. & W. F. Maxwell, P.O. Box 1951, San Diego, Calif., CA, $1,204,830, grading, surf. 1.7 mi. 4 bridges on Balboa Ave., San Diego Co. Bids Dec. 3, awarded Dec. 16. CD 12/9, under LB.

Wm. H. Schellock, 1653 Olive St., Bakersfield, Calif., LB, $250,462, est. $300,000, sewage treatment plant, pressure line and pump station;

Stroud & Seabrook Constr. Co., Sonora and Butte Sts., Bakersfield, Calif., LB, $524,866, est. $611,000, sewage collection sys., main trunk lines, outfall and pump station; LB $455,986, est. $611,000, sewage collection sys., main trunk line, outfall and pump station, c.i. pipe alternate, BAKERSFIELD, CALIF. Ridgecrest Sanitation District, 1100 26 St., Bakersfield, Calif. Bids Dec. 15. CD 12/7.

Kevry Constr. Co., Inc., 655 Peralta Ave., San Leandro, Calif., LB, $181,096, est. $250,000, sanitary sewers in District 1953-1, BANNING, CALIF. City, 161 W. Ramsey St., Banning, Calif. Bids Dec. 15. CD 11/30.

Hess Constr. Co., 2303 E. Artesia St., Long Beach, Calif., LB, $93,600 imprv. portions of Los Coyotes diagonal and Palo Verde Ave., North Long Beach, LOS ANGELES, CALIF. Los Angeles Co. Hall of Records, Los Angeles, Calif. Bids Dec. 15. CD 11/25.

† **Petroleum Constr. Co.**, 2500 N. Alameda St., Compton, Calif., LB, $226,881, est. $200,000, weather station addns., alterations, ENG-04-353-54-36, SANTA ROSA ISLAND, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Dec. 16.

CONTRACTORS SAVE MONEY, SPEED WORK

WITH ON-THE-JOB USE OF . . .

WHEELER
SOUND POWERED
Electric
TELEPHONES

- NO BATTERIES. No outside power.
- LOW in FIRST and LAST COST.
- CLEAR SPEECH. CLEAR SIGNAL.
- ALWAYS READY in EMERGENCY.
- SIMPLE standard WIRING.
- Corrosion-resistant construction.

ASK ABOUT NEW EXECUTIVE TYPE CRADLE PHONE.

the WHEELER
INSULATED WIRE CO., INC.
Division of The Sperry Corporation
1126 East Aurora Street, Waterbury 20, Conn.

IOWH33B

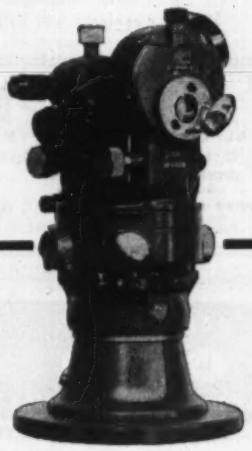
HOW TO DESIGN REINFORCED CONCRETE MEMBERS IN 30 SECONDS!

New CRSI Handbook has thousands of finished designs all worked out! Does away with laborious formulas and calculations. Simply locate the table covering the member you are designing, apply span and load requirements, then read *off directly* concrete dimensions and reinforcing steel data. Follows latest codes and practices. Money-back guarantee. If book returned within 10 days. No C.O.D.'s, please!

Concrete Reinforcing Steel Institute
38 South Dearborn St., Chicago 3, Ill.

ON TARGET

Kern AARAU



Sturdy as a pioneer's arm and infinitely more accurate than the most wonderful frontier rifle—the Kern DKM1 double circle theodolite is a superb example of Kern's master craftsmanship.

PORTABLE, ACCURATE AND TOUGH!

The DKM 1

Featuring an optical micrometer is an exceptionally fine theodolite. In addition, compactness, lightness and great precision combine to make this a superior instrument for large construction sites, engineering work, complimentary triangulations, and exploratory expeditions in all climates. You get direct readings to 10 seconds, interpolation to 1 second. 20X telescope and coated optics throughout. Send today for fully illustrated brochure!

Complete Service Department
Factory Trained Personnel

Kern Surveying Instrument Division

Paul Reinhart Co., Inc.

68 Beaver St., New York City

BUILDINGS

LOW BIDS AND CONTRACTS

J. P. Hopkins, 2304 50 Ave. S.W., Seattle, Wash., LB, $332,500, general contract 30,000 sq. ft., steel frame, frame Junior High SCHOOL addns. and existing structure alterations, BELLEVUE, WASH. School District 405, Bellevue, Wash. Bids Dec. 15. CD 11/30.

W. D. Foote, 1716 Oak St., Bakersfield, Calif., LB, $339,869, 26,361 sq. ft. Roosevelt Elementary SCHOOL addn., BAKERSFIELD, CALIF. Bakersfield City School Dist., 1600 "K" St., Bakersfield, Calif. Bids Dec. 10. CD 7/8.

J. G. Boespflug Constr. Co., 605 S. Lucas St., Los Angeles, Calif., LB, $389,000, 32,000 sq. ft. SPEECH ARTS BLDG., COSTA MESA, CALIF. Orange Coast Junior College District, 19951 S. Harbor Rd., Costa Mesa, Calif. Bids Dec. 11. CD 11/17.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

Que., Casey—BUILDINGS, etc.—B.A. 1/26—Defence Constr. Ltd., 1247 Guy St., Montreal, various buildings and complementary services, R.C.A.F. Station, $200,000. Plans deposit $100. M. P. McAndrew, c/o owner, engr.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Miron & Freres Ltee, 2201 Cote St. Michel Rd., Montreal, Que., CA, $275,000, WW. pipe, mains, booster station, 2 reservoirs, VAL MORIN, QUE. Municipality, Val Morin, Que. Bids Dec. 7. CD 12/3.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Milne & Nichols Ltd., 57 Bloor St. W., Toronto, Ont., CA, $1,318,397, Regent Park HOUSING DEVELOPMENT BLDGS. 20, 28 and 29, TORONTO, ONT. Housing Auth. City of Toronto, City Hall, Toronto, Ont. Bids Nov. 6, awarded Dec. 15. CD 12/8, under LB.

Lamy Construction Co. Ltd., 5001 Verdun Ave., Verdun, Que., Owner Builds, $700,000, 75 one story, bsmnt., concrete brick DWELLING UNITS, CHATEAUQUAY, QUE.

Broadway Construction Ltd., 1421 MacKay St., Montreal, Que. Owner Builds, $750,000, 60 concrete, brick stone COTTAGES, MONTREAL, QUE. Ben-Ami Shulman, 1421 MacKay St., Montreal, Que., archt.

ALASKA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† U. S. Eng., Anchorage, Alaska, cancelled bids to have been opened Jan. 26, water, sewer, steam and electrical distr. sys. for outside utilities and installation of electric power for pumps in salt water pump house, ENG-95-507-54-20, WHITTIER, ALASKA. CD 12/21.

BUILDINGS

LOW BIDS AND CONTRACTS

† U. S. Eng., Anchorage, Alaska, cancelled bids to have been opened Dec. 29, 12,000 sq. ft. rein.-con. ATB SHOP and 9,000 sq. ft. rein.-con. paved apron, 9 in. thick. ENG-95-507-54-40, BIG DELTA, ALASKA. CD 11/25.

† U. S. Eng., Anchorage, Alaska, cancelled bids to have been opened Jan. 14, 57x98 ft. masonry POL STORAGE and PACKAGING WAREHOUSE. ENG-95-507-54-15, FORT RICHARDSON, ALASKA. CD 12/14.

Proposed Projects

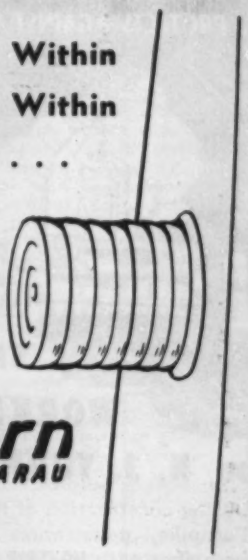
WATER SUPPLY

▲ Conn., Greenwich—Greenwich Water Co., S. J. Bargh, pres., Greenwich, 700 ft. long, 35 ft. high reservoir, Nianus River, $3,000,000. CD 1/6.

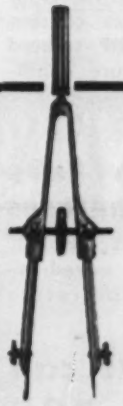
Kern AARAU

PRECISION INSTRUMENTS SINCE 1819

Wheels Within
Wheels Within
Wheels . . .



Kern AARAU



MODEL 1082

Taken for granted, often overlooked, the center wheel of your bow problem represented an enormous problem for Kern engineers. Ordinary wheels, in time, warp and wear slightly . . . destroying the absolute precision every Kern instrument must have. The answer was lamination . . . the careful manufacture of this tiny wheel layer by layer. A tiny detail, yes, but one that represents in essence the care and study that lies behind the Kern name.

FAMED KERN TRADITION

Meticulous attention to every minute feature . . . painstaking devotion to every single facet . . . every minute feature of your instrument. . . . These are the secrets of Kern superiority . . . the hidden guarantees that give you performance and dependability beyond compare.

SEE OUR COMPLETE LINE

Write today for our new, fully illustrated catalogue of sets and individual pieces. Set prices from $15 to $100. Bow divider pictured $4.70.

At your nearest dealer, or write direct to:

KERN DRAWING INSTRUMENT DIVISION

Borden & Riley Paper Co.

60-R E. 11th Street, New York City

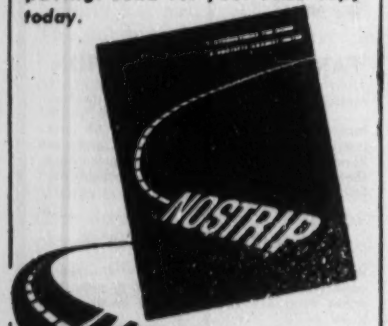
1. STRENGTHENS THE BOND
2. PROTECTS AGAINST WATER

SAVED WORKDAYS on N. J. TURNPIKE

During construction of the N. J. Turnpike, penetration courses were shot with **NOSTRIP**-treated asphalt under moisture conditions which normally would have halted the job.

NOSTRIP offers important advantages in all road applications of asphalt — surface treatment, mixed-in-place (mulch), penetration macadam, etc.

How NOSTRIP can work for you is explained in a comprehensive new brochure covering the use of NOSTRIP in all types of bituminous paving. *Send for your FREE copy today.*



MAGUIRE INDUSTRIES
INCORPORATED
182-27 Liberty Ave., Jamaica 33, N. Y.
DISTRIBUTORS EVERYWHERE

▲ **Md., Hyattsville**—Washington Suburban Sanitary Comn., Hamilton St., double water treatment facilities incl. 2 water treatment units and two 2.8 m.g. storage reservoirs at Patuxent River near Laurel. $1,900,000.

N. C., Burlington—City voted bonds Dec. 15, expansion city water facility and WW. $882,000; tapping Haw River as a permanent water supply, $272,000; Stoney Creek Pumping Station imprvs., $100,000; new water line from Stoney Creek to Filter plant, $228,000; pass line at WW use as emergency, $10,000. CD 11/17.

▲ **Okla., Muskogee**—City, bond election Jan. 19, water supply line from Fort Gibson, $2,000,000. CD 12/16.

▲ **Tex., Nacogdoches and Lufkin**—Nacogdoches-Lufkin Water Assn., c/o Thomas E. Baker & H. J. Shands, First State Bank, Nacogdoches, dam across Angelina River, irrigation and domestic, $1,000,000; clearing, grubbing, site area for dam, $75,000. CD 12/17.

▲ **B. C., Vancouver**—City, City Hall, ratepayers passed bylaw for water mains constr. program over 5-year period. $4,500,000. J. C. Oliver, City Hall, city engr. CD 8/29/43.

SEWERS, WASTE DISPOSAL

▲ **Mo., St. Joseph**—City, defeated bonds Dec. 8, Proposition No. 1, repair existing sewers and exten. main sewers, $2,833,000; Proposition No. 2, lateral or district sewers, $3,350,000, Black & Veatch, 4706 Broadway, Kansas City, Mo., consult. engrs. CD 11/27.

▲ **Tex., San Antonio**—City, City Hall, Military Plaza, cancelled bond election Dec. 31, sanitary sewer plant expansion, $700,000; sanitary sewer line, Alazan-Elmendorf area, $775,323; city-wide sanitary sewer lateral lines, $500,000. Tom Coghill, city engr. CD 12/17.

▲ **Va., Fairfax**—Bd. Supervs. Fairfax Co., Court House, voted $20,000,000 bonds Dec. 15, constr. county-wide sewerage sys., incl. approx. 200 mi. pipe lines, 3 treatment plants, pumping stations, etc. R. Stuart Royer & Assocs., 15 W. Cary St., Richmond, and Massey Engineers, Fairfax, consult. engrs.

▲ **B. C., Vancouver**—City, City Hall, ratepayers passed bylaw for sewer construction program over 5-year period, $4,000,000. J. C. Oliver, City Hall, city engr. CD 11/19/52.

BRIDGES

▲ **B. C., Vancouver**—City, City Hall, ratepayers passed bylaw for maintenance and rebuilding of bridges over 5-year period, $2,160,000. J. C. Oliver, City Hall, city engr. CD 11/15/43.

STREETS AND ROADS

▲ **Ala., Birmingham**—City, City Hall, voted $2,000,000 bonds, street imprvs. CD 6/29/50.

▲ **Ala., Pell City**—St. Clair Co. Comn., Pell City, 47.8 mi. asphalt paving 1954 road program, $1,300,000.

▲ **Tex., San Antonio**—City, City Hall, Military Plaza, cancelled bond election Dec. 31, expressway development, $10,500,000; city-wide street paving, $1,500,000; street paving, special projects, $600,000. Tom Coghill, city engr. CD 12/17.

▲ **B. C., Vancouver**—City, City Hall, ratepayers approved bylaw for street imprvs., over 5-year period, $8,310,000. J. C. Oliver, City Hall, city engr. CD 9/28/43.

EARTHWORK, WATERWAYS

▲ **Calif., Sacramento**—Sacramento Municipality Utility District, 2101 K St., Sacramento, power expansion in Rubicon River Basin and on upper American River with 4 power houses, at Union Valley, Jaybird, Camino and White Rock and 10 dams consisting 5 dams in Rubicom River Basin, Loon Lake, Union Valley on Silver Creek, Ice House Site on S. fork of Silver Creek; 2 diversion dams on Silver Creek, Slate Creek, Site on S. Fork of American River. $80,000,000. Frank E. Bonner, 1 Montgomery St., San Francisco, consult. engr.

▲† **Oregon**—U.S. Eng., Pittock Block, Portland, navigation lock, adjacent gravity dam and fish ladder, $10,000,000; four, eight or fourteen main generators, $10,000,000; transformers for main generators 1 to 8, $1,000,000; 15-kv bus and breakers for main units 1 to 8 and fishwater units, $1,000,000; hydraulic equip. for intake gates, $100,000; lifting beams for powerhouse intake gates, $100,000; wire and cable, $100,000; fishwater unit transformers, $100,000; station service and battery switchboards and 6 MG sets, $100,000; constr. U.P. R.R. bridge, Deschutes River, $1,000,000; constr. U.P. R.R. bridge, Fulton Canyon, $100,000; constr. U.P. R.R. bridge, Spanish Hollow, $100,000; stockpile ballast for U.P. R.R. relocation, $100,000; procurement of rail and other track materials, $100,000; spillway crane, $100,000; two station service generators, $100,000, foregoing Wasco Co.; constr. U.P. R.R. bridge at Rufus, $100,000; grade U.P. R.R. and Hy. U.S. 30 from Biggs to Rufus, $1,000,000, foregoing, Sherman Co.; grading S.P. and S. R.R., North Dalles to Wishram, Klickitat Co., $1,000,000, The Dalles Dam, Columbia River.

▲ **Tex., San Antonio**—City, City Hall, Military Plaza, cancelled bond election Dec. 31, flood control, $2,-

tunnels
to towers

TOSS IT TO TERRY!

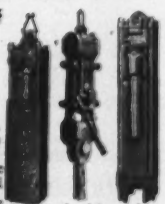
For over 20 years, Terry has tackled difficult assignments involving steel design, construction or fabrication to close tolerances. If you have a problem involving TV or Radio Towers, Bridges, Tunnels, Piers, Tanks, Industrial Plants, Airplane Hangars, etc.—'phone, write, wire—a Terry structural steel engineer will call.

TERRY
STEEL CONTRACTORS, INC.
ENGINEERS • FABRICATORS • ERECTORS • DESIGNERS
Sales & Executive Offices
103 PARK AVENUE, NEW YORK 17, N. Y
Telephone: MUrray Hill 9-0011

DEPENDABLE
OHIO
LOCOMOTIVE CRANES
DIESEL • GASOLINE • ELECTRIC • STEAM

25 TO 50 TONS CAPACITY
THE OHIO LOCOMOTIVE CRANE CO
BUCYRUS OHIO

McKIERNAN-TERRY
Wide-Range Line of
PILE HAMMERS and EXTRACTORS



Now made in complete standardized line of 11 double-acting hammers, 5 single-acting hammers and 2 double-acting extractors.
Write for free descriptive Bulletins.
Also builders of coal and ore bridges, bulk material unloaders, bridge operating mechanisms, hoists and marine equipment, and specially designed machinery.
McKIERNAN-TERRY CORP.
13 Park Row New York 7, N. Y.

500,000; San Antonio River beautification and imprv. program, bank widening, elimination of bends, etc. $200,000. Tom Coghill, city engr. CD 12/17.

AIRPORTS

▲† O., Columbus—HOUSING—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., plans by Inscho, Brand & Inscho, 60 E. Broad St., 500-unit housing development for Air Force Personnel. $5,000,000.

Tex., San Antonio—AIRPORT EXPANSION—City, City Hall, Military Plaza, cancelled bond election Dec. 31, airport expansion. $900,000. Tom Coghill, city engr. CD 12/17.

LATIN AMERICA

▲ Mexico, Isthmus of Tehuantepec—Texas International Sulphur Corp., 6300 Navigation Blvd., Houston, Tex., plans sulphur plant (2nd unit). $7,000,000.

▲ Venezuela, Laguayra—Venezuelan Govt., c/o Defense Minister Col. Oscar Mazzei, Caracas, plans Naval Base, on North Coast, 70 mi. west of here. $40,000,000.

PUBLIC BUILDINGS

▲ Ala., Birmingham—SCHOOL IMPRVS.—City, City Hall, voted $10,500,000 bonds, school imprvs. CD 10/9.

▲ Calif., Redlands—SCHOOLS—Redlands Joint Union High School District, Redlands, voted $1,350,000 bonds school construction and school repairs. CD 12/9.

▲ Calif., Redwood City—SCHOOL—City, Elementary School District, Redwood City, $1,500,000 bond election Feb. 19, new school bldg. CD 6/24.

▲ Calif., San Bernardino—HOSPITAL EXPANSION—San Bernardino Co., Court House, plans by J. Dewey Harnish, 222 E. "B" St., Ontario, County Hospital expansion program $2,000,000. CD 1/8.

▲ Conn., Middletown—CONTINUED TREATMENT—State, Ralph G. Macy, P. Wks. Comr., State Office Bldg., Hartford, plans by Moore & Salsbury, 10 N. Main St., West Hartford, continued treatment bldg., Connecticut State Hospital. $2,000,000. CD 4/22.

▲ Ga., Rome—HOSPITAL—Floyd Co., plans by Harvey & Elliott, Rome, hospital addn. $1,500,000. CD 6/24.

▲ Ind., Hammond—SCHOOL, etc.—School City of Hammond, 5935 Hohman Ave., Lafayette Elementary School and Gymnasium, $2,000,000. CD 11/15/44.

CEMENT GUN COMPANY USES "GUNITE" FOR WALLS OF INDUSTRIAL BUILDINGS

The pictures show the Republic Aviation Corporation building at Farmingdale, N. Y. The walls above the sash and all moniter ends are 2" mesh reinforced "GUNITE" carried on the steel framing. We did this job under plans and specifications prepared by Albert Kahn Associated Architects and Engineers. It is similar to scores of other industrial buildings on which we have built "GUNITE" exterior walls, and in many cases interior partitions.

"GUNITE" provided weatherproof, light-weight, permanent walls for industrial buildings, which fit well into modern industrial architecture. The inside surfaces of the walls are smooth (plywood form surface) and therefore do not collect dust and may be painted as desired.

Many other instances of repair, remodeling and new construction with "GUNITE" are described and pictured in Bulletin A2400. A request, on your letterhead, will bring a free copy by return mail.

CEMENT GUN COMPANY
"GUNITE" CONTRACTORS
GENERAL OFFICES – ALLENTOWN, PA., U. S. A.
MANUFACTURERS OF THE CEMENT GUN

Why use a Big Compressor on air jobs meant for a SCHRAMM 60 C. F. M.?

It costs money to haul a BIG air compressor to a job that can be handled by a smaller unit!

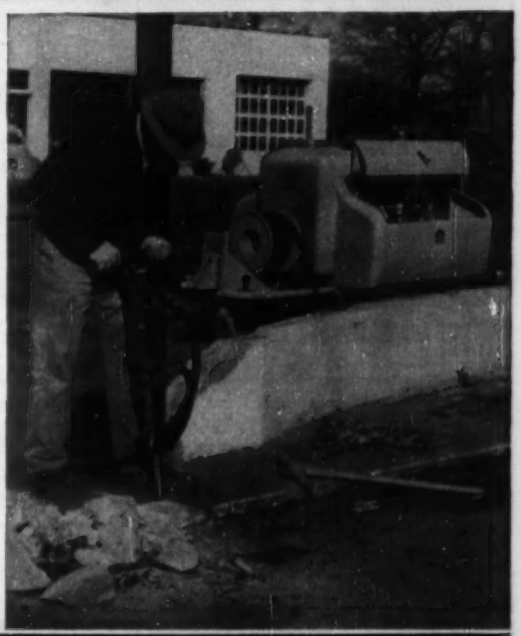
That's why Schramm offers smaller size air compressors — like the Model 60 illustrated — as well as large units — to save you money. Moreover, they embody all the fine features of workmanship and material found in our larger size units.

Popular uses of Schramm smaller compressors include trench digging, backfill tamping, paint spraying and roofing material, operating paving breakers, 20 and 40# rock drills, concrete vibrators, saws, etc.

Tools as well as Compressors are available at once. Compressor sizes range from 20-35-60-105-210-315 and 600 c.f.m. in various types of mountings.

Write today for Bulletin AED

SCHRAMM, INC.
The Compresser People • WEST CHESTER, PENNSYLVANIA



SCHRAMM AIR COMPRESSORS

A SIZE AND MODEL FOR EVERY AIR NEED

The Theory and Practice of REINFORCED CONCRETE

Covers the design of ordinary reinforced-concrete structures from the viewpoint of the practicing engineer. Emphasizes basic principles, and includes an introduction to prestressed concrete, precast concrete, and ultimate-load design. Covers properties of concrete, bond, beams, columns, retaining walls, footings, forms, etc., and calculation of stresses. In line with American Concrete Institute code. By C. W. Dunham, Assoc. Prof. of Civil Engr., Yale Univ. 3rd Ed. 499 pp., 312 illus., 32 tables, $7.00

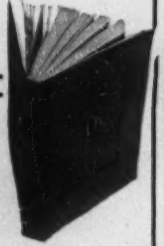
ESTIMATING CONSTRUCTION COSTS

Here are the practical considerations you need to know to make accurate estimates on engineering projects—the understandable methods and helpful data you need for realistic, sound estimating. Each major type of construction is covered in detail not only on materials, labor, and equipment, but on overhead and profit as well. Over 100 time-saving tables help you make speedy, accurate estimates. **By R. L. Peurifoy, Professor of Civil Engineering, A&M College of Texas. 350 pp., 60 illus., $7.50**

SURVEYING

Instruments and Methods

A handy guide to precision in small-area surveying in the field and shop. Whether you are aligning machinery, planning construction, setting a jig, or making a map, it shows you the most accurate and rapid methods of surveying the job. Describes everything of importance from the care and use of instruments and equipment to practical techniques for solving hundreds of specific problems. **By P. Kissam, Princeton University. 384 pp., 260 illus., $5.00**



HANDBOOK OF APPLIED HYDRAULICS

Needed facts on all phases of hydraulic engineering — on experience, advances, planning, and design of hydraulic works. Practical data on hydrology, water supply, sewerage, water power, hydraulic structures, etc. New material on gravity dams, spillways, streambed protection, underground stations. Applications are well illustrated by examples from actual projects. **Compiled by a Staff of Specialists; Edited by Calvin V. Davis, Vice Pres., Harza Engin. Co. 2nd Ed., 1272 pp., 400 illus., $15.00**

READ THESE BOOKS 10 DAYS FREE

McGraw-Hill Book Co., 330 W. 42 St., NYC 36

Send me book(s) checked below for 10 days' examination on approval. In 10 days I will remit for book(s) I keep, plus a few cents for delivery, and return unwanted book(s) postpaid. (We pay for delivery if you remit with this coupon; same return privilege.)

- ☐ Dunham—**REINFORCED CONCRETE**—$7.00
- ☐ Peurifoy—**CONSTRUCTION COSTS**—$7.50
- ☐ Kissam—**SURVEYING**—$5.00
- ☐ Davis—**HDBK. OF APP. HYDRAULICS**—($15; payable $5 in 10 days, $5 a month)

(Print)
Name .....
Address .....
City .....Zone.....State.....
Company .....
Position ENR-1-7

This offer applies to U. S. only

▲ **Mich., Rochester**—SCHOOL—City, Bd. Educ., voted $1,800,000 bonds Dec. 16, brick, steel high school, 19 elementary school rooms in addn. to 2 schools, new school, H. E. Beyster & Assoc., 2000 Industrial Trust Bldg., Detroit, archts. CD 12/11.

▲ **Mo., Columbia**—MEDICAL SCIENCE—Curators of University of Missouri, Leslie Cowan, secy, Jesse Hall, plans by Jamieson, Spearl, Hammond & Grolock, 1696 Arcade Bldg., 812 Olive St., St. Louis, Zone 1, 4 story, brick medical science bldg., 4 story nurses home connected with teaching hospital, $3,000,000. CD 6/4/52.

▲ **Mont., Billings**—COURT HOUSE—Bd. Comrs., Yellowstone Co., plans by Chandler C. Cahagen, Hedden Bldg., 8 story, 100,000 sq. ft. floor space, court house, $1,500,000. CD 10/16/46.

▲ **N. Y., New York**—HIGH SCHOOL—Bd. Educ., Constr. Bureau, 49 Flatbush Ave. exten., Brooklyn, Zone 1, plans by Kelly & Gruzen, 80 Fifth Ave., Zone 3, printing Trades High School 49th St. between 9 and 10 Aves. $8,500,000. CD 8/20/52.

▲ **N. Y., West Point**—LAUNDRY and DRY CLEANING—U. S. Eng., 80 Lafayette St., New York, Zone 13, plans by John & Drew Eberson, 2 W. 47 St., New York, Zone 19, laundry and dry cleaning bldg. $1,000,000-$3,000,000.

▲ **N. D., Jamestown**—HOSPITAL—State Bd. Admin., Bismarck, plans by Ritterbush Bros., Bismarck, ward bldg. at N. D. State Hospital. $1,082,000.

▲ **O., Cleveland**—MUSEUM OF NATURAL HISTORY—Museum of National History, 2717 Euclid Ave., Zone 15, plans by Garfield, Harris, Robinson & Schafer, 1740 E. 12 St., Zone 14, four unit center in Wade Park, incl. Hall of Nature, Planetarium, Hall of Science and Auditorium with offices, various different levels, 600-car parking area. $2,000,000.

▲ **Pa., Brackenridge**—HIGH SCHOOL—Bd. Educ., Harbrack Joint School Dist., Natrona, plans by Warwick Co., 106 E. Walnut St., Butler, 2 story, brick, steel high school addn. $1,019,000.

▲ **Pa., Colonial Park (P.O. Harrisburg)**—HIGH SCHOOL—Dauphin County Joint School Bd., Rev. Elias H. Phillips, secy., 4212 Jonestown Rd., plans by E. G. Good, Jr., 904 N. 2nd St., Harrisburg, Senior High School. $2,800,000.

▲ **Tex., San Antonio**—HEALTH CLINIC—City, City Hall, Military Plaza, cancelled bond election Dec. 31, central health center, $1,112,000. Tom Coghill, City engr. CD 12/17.

▲ **Va., Richmond**—SCHOOLS—Henrico Co., 22nd and Main Sts., $4,000,000 bond election Dec. 30, schools. CD 12/3.

▲ **Va., Williamsburg**—GYMNASIUM, etc.—College of William & Mary, Williamsburg, women's gymnasium, $890,000; auditorium, $1,150,000; academic bldg. $1,215,250; library, $1,773,290.

▲ **Wash., Yakima**—SCHOOL—School Bd., Yakima, high school. $1,500,000. CD 1/16/46.

▲ **B. C., Vancouver**—AUDITORIUM—City, City Hall, ratepayers passed bylaw constr. 3500 seat auditorium, Cambie and Dunsmuir Sts. $2,750,000. CD 10/21/43.

▲ **B. C., Vancouver**—SCHOOLS—Vancouver School Bd., 1595 W. 10 Ave., ratepayers passed bylaw for school construction program over 5-year period, $19,600,000. CD 1/15/47.

COMMERCIAL BUILDINGS

▲ **California**—MODEL CITY—**Utah Constr. Co.**, 593 Market St., San Francisco, model city with shopping center, homes, etc., 5,000 acre tract near Moraga, in vicinity of Walnut Creek, Lafayette and Orinda, Contra Costa Co. $100,000,000.

▲ **Calif., Redwood City**—HOMES—Hillside Manor Corp., 6798 Mission St., Daly City, Sterling Heights No. 3 subdivision, 300 or more homes on 90-acre site. $5,000,000.

▲ **Calif., San Bruno**—HOMES—Pedro Valley Development Co., 1718 Broadway, Redwood City, 1000 tract homes, east side of Skyline, north of Sneath Lane and west of Junipero Serra. $10,000,000.

▲ **Conn., Hamden** — SHOPPING CENTER — National Plazas, Inc., c/o Attorney James P. Doherty, 1224 Dixwell Ave., designs by Raymond Loewy Assocs., 488 Madison Ave., New York, N. Y., 37 to 47-store U-shaped Shopping Center, north of Hamden High School facing Dixwell Ave. $7,000,000.

▲ **Mass., Boston**—OFFICE—Owner, c/o Herbert J. Krapp, archt., 1607 Broadway, New York, N. Y., 9 story, bsmnt., 100x200 ft., masonry office, Boylston St. $3,000,000. Cleverdon, Varney & Pike, 120 Tremont St., consult. engrs.

▲ **Mich., Royal Oak**—SHOPPING CENTER—Northwood Center, Inc., Eugene Sloan, 16856 Schaefer St., Detroit, shopping center incl. department store, supermarket, 25 stores, parking space covering 12 acres, Thirteen Mile Rd. at Woodward Ave. $5,000,000.

▲ **Neb., Omaha**—HOUSING, etc.—Gilbert C. Swanson & W. Clarke Swanson, 1202 Douglas St., plans by L. A. Daly Co., Insurance Bldg., housing, shopping center, 84 and Dodge Sts. Approx. $1,500,000.

▲ **N. Y., New York**—APARTMENT—Northway Gardens, Inc., 332 E. 149 St., Zone 51, plans by Morris Rothstein & Son, 186 Joralemon St., Brooklyn, Zone 2, 6 story apartment, Thwaite Pl. and Barker Ave. $1,000,000.

▲ **O., Cincinnati**—APARTMENT MOTEL—M. R. Mahan, John Schrenk & Esther Straus, c/o Gordon Rich, atty., Second Natl. Bank Bldg., 300-unit apartment-motel on Victory Parkway, near Asmann Ave. $1,500,000.

▲ **O., South Russell Twp.** (Chardon P.O.)—SHOPPING CENTER—Rowland Realty Co., 4163 Mayfield Rd., Cleveland Zone 24, 1 story, approx. 60,000 sq. ft.

(Continued on page 85)

CONCRETE JOIST CONSTRUCTION

RENTAL and ERECTION SERVICE

Member of CONCRETE REINFORCING STEEL INSTITUTE CRSI founded 1924

Gateway PANS

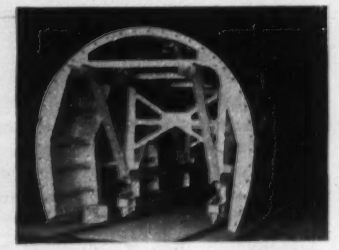
Stocked in . . .

- CHICAGO
- NEW YORK
- BALTIMORE
- CINCINNATI
- KANSAS CITY

NAILED-DOWN & SLIP-IN PANS

Ask for Catalog No. 3100

GATEWAY ERECTORS, INC.
3233 W. Grand Ave., Chicago 51, Illinois



MAYO STEEL FORMS

. . . SPEED TUNNEL JOBS

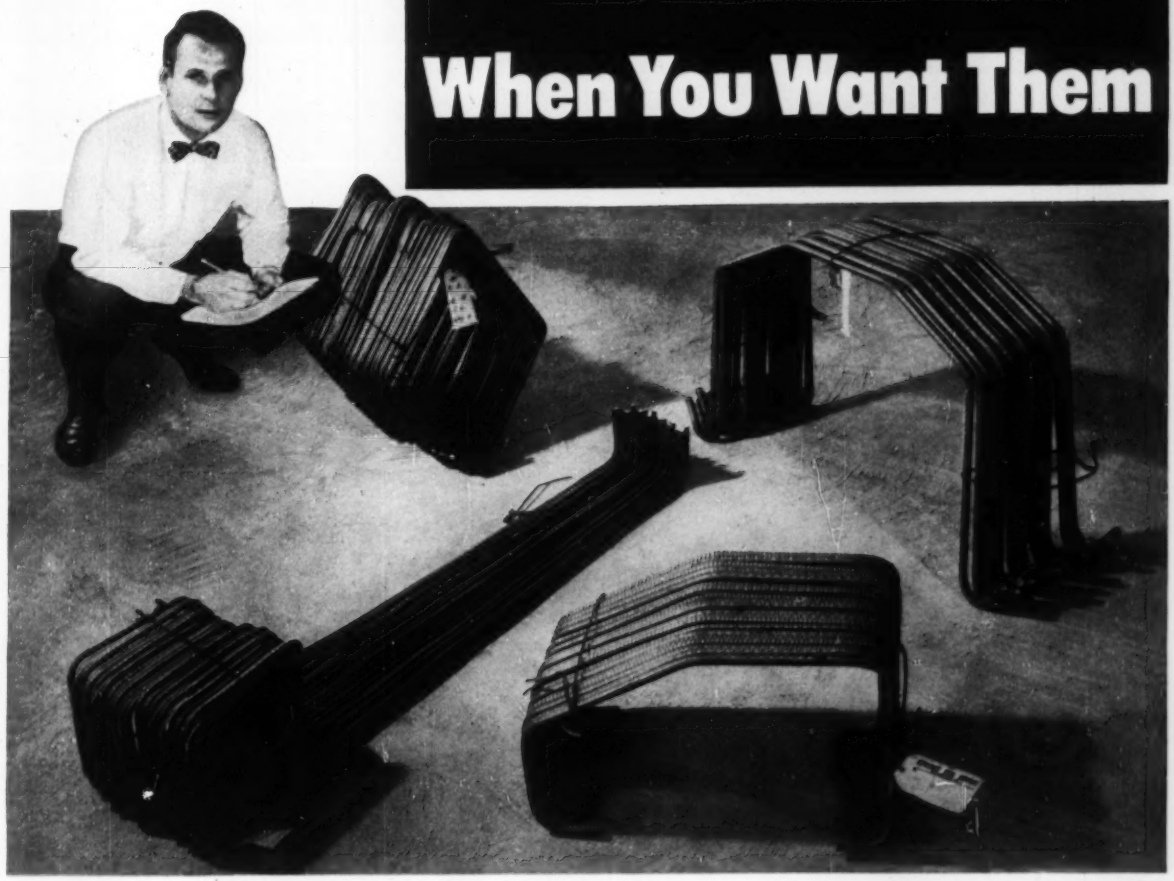
Mayo produces all types of Tunnel Forms—telescopic, non-telescopic, separate sidewall and arch, single unit, full round forms for monolithic pours, etc. Each is designed for the exact requirements of the job—be it Tunnel, Sewer or Conduit!

Write for our FREE Bulletin No. 15 or send details.

STEEL FORMS • HEADFRAMES • MUCK BINS • SHIELDS • AIR LOCKS • LOCOMOTIVES • MINE CARS • GROUTERS

MAYO
TUNNEL AND MINE EQUIPMENT
Lancaster, Penna.

You Get the Bars When You Want Them



Bethlehem Bar Fabricating Shops shape and cut bars to specifications, and ship them to your job-site bundled and tagged, ready for placing.

When you order Bethlehem Reinforcing Bars you can depend on it, they'll be delivered right on time. One reason is that we have bar fabricating shops in eleven locations around the country. Bars can be shipped from the shop nearest you, so they'll be on hand when you want them.

And when you specify Bethlehem Bars—in any tonnage, any standard size—you know your supply is assured. For Bethlehem has long been recognized as a dependable source of supply for reinforcing steel.

Bethlehem Reinforcing Bars are made exclusively from new-billet steel of known analysis. They come in size ranges from Numbers 3 to 11, and have deformations which meet ASTM Specification A-305. They are cut to length and bent in our shops, and reach you bundled and tagged, with bar lists included, ready for placing.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM BAR FABRICATING SHOPS:

Boston, New York, Philadelphia, Johnstown, Pa., Baltimore, Buffalo, Chicago, St. Paul, Los Angeles, San Francisco and Seattle.

BETHLEHEM STEEL

BETHLEHEM REINFORCING BARS

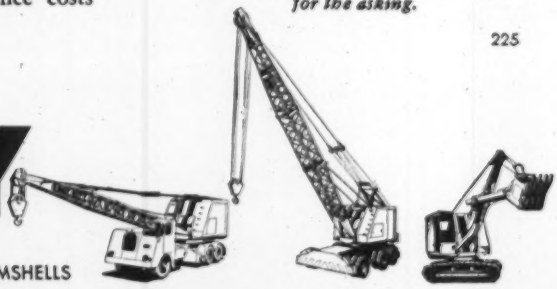
REACH FOR PROFIT WITH A BAY CITY

High lifts and long reaches are easier with a CraneMobile® because it is engineered and built as a complete unit by BAY CITY to provide a sturdy, well-balanced crane with a low center of gravity. Here, for example, the Weiker Transfer and Storage Co., Denver, is using a 20-ton capacity Model 180 CraneMobile with 80-foot boom and 15-foot jib — 95 feet in all — to set steel for the erection of a super market. Independent boom hoist, with power-up and power-down, assures accurate boom and load control over a wide radius, which means bigger profits through more efficient operation. Heavy-duty construction, plus simplified machinery assembly and added accessibility help keep maintenance costs low. For complete details see your nearest BAY CITY dealer or write for catalog.

Write for any of these catalogs—crawler machines, ½ yard up; CraneMobiles and CraneWagons of 12½, 20 and 25 ton capacity—they are yours for the asking.

225

BAY CITY



SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

(Continued from page 82)

bsmnt., masonry shopping center, air-conditioning, on Rte. 422, incl. 500-car parking area. $1,000,000.

▲ Okla., Oklahoma City—SANCTUARY—St. Lukes M. E. Church, 1400 N. Harvey St., plans by Coston & Frankfurt, 323 E. Madison St., sanctuary. $1,000,000.

▲ Tenn., Memphis—HOSPITAL—St. Joseph Hospital, 264 Jackson Ave., hospital addn. $2,000,000.

▲ Tex., Dallas—SHOPPING CENTER—M. Leslie Hill Enterprises, 101 Walnut Hill Shopping Village, Dallas, plans by Smith & Mills, Mercantile Bank Bldg., 210,000 sq. ft. masonry shopping village center. $1,850,000.

▲ Va., Front Royal—RESIDENCES—Emil E. Walsh, 5429 Connecticut Ave. N. W., Wash., D. C. plans by Walter Huenemoerder, 2647 Connecticut Ave., N. W., Wash., D. C., 200 one story, bsmnt. masonry residences. $1,750,000.

▲ Va., Kempsville—RESIDENCES—Colony Constr. Co., 63 St., Virginia Beach, 150 one story frame residences. $1,500,000. N. P. Johnson, c/o owner, engr.

▲ Va., Norfolk—APARTMENTS—Colonial Building Co., Military Hy. and Bells Rd., 2 story, 185 garden type frame apartments, near here. $1,500,000. Nathan Gumenick, c/o owner, engr.

▲ Va., Norfolk—HOSPITAL—DePaul Hospital, Granby and Kingsley Lane, plans by T. David Fitz-Gibbon, Royster Bldg., 3 story hospital wing addn. $1,750,000.

▲ Va., Warwick—SHOPPING CENTER—States Constr. Co., 3000 Warwick Ave., plans by Bernard B. Spigel, Kresge Bldg., Norfolk, 1 story masonry shopping center, $5,000,000.

▲ Wash., Kennewick—HOUSES—Guthrie Constr. Co., N. 2918 Nevada St., Spokane, 76 houses in Kennewick Highlands. $1,000,000.

▲ Ont., Toronto — APARTMENT BLOCKS — Modern Constr. Co., 1862 Bathurst St., seven 32-unit, 3 story, bsmnt., 90x190 ft., apartment blocks, East Drive. $3,000,000.

▲ Que., Ville La Salle—HOUSING DEVELOPMENT—Canada Cold Storage Co. Ltd., 733 William St., plans by Thibodeau & Thibodeau, 1247 Guy St., Montreal, Company Housing Development for employees, Wanklyn Ave., Jean Milot and Clement Sts. $2,100,000.

INDUSTRIAL BUILDINGS

▲ Ill., Chicago—TRUCK TERMINAL—Material Service Corp., 200 W. Washington St., 30-unit truck terminal, Paulina St., Blue Island Ave. and south branch of river. $1,500,000. Ralph H. Burke, 20 N. Wacker Dr., Zone 6, consult. engr.

▲ Mich., Detroit—HEADQUARTERS—Ford Motor Co., 3000 Schaefer St., Dearborn, headquarters bldg. to house executive and administrative offices, mfg. facilities, Ecorse Twp. near Willow Run Expressway and north of Oakwood Blvd.

▲ N. Y., New York—WAREHOUSE, etc.—Miles Shoes, 345 Hudson St., Zone 14, plans by Frank Grad & Sons, 11 Commerce St., Newark, N. J., 6 story warehouse and office, Tenth Ave. from 59 to 60 Sts. $6,500,000.

▲ N. Y., New York—WAREHOUSE, etc.—Seeman Bros., Inc., 121 Hudson St., Zone 13, plans by David & Earl J. Levy, 70 E. 45 St., Zone 17, warehouse and office, on 7-acre tract, W. 225 St., near Broadway. $4,500,000.

▲ O., Bratenahl—LABORATORY—Eaton Mfg. Co., 739 E. 140 St., Cleveland, Zone 10, research laboratory. Approx. $1,000,000. Martin P. Winther, c/o owner, engr.

▲ Pa., Phila.—FACTORY, etc.—E. I. duPont deNemours & Co., Inc., Louviers Bldg., Newark, Del., factory and warehouse addns., alterations, $2,000,000. CD 5/9/49.

▲ Pa., Phila.—INDUSTRIAL CENTER—Pennypack Industrial Center, Inc., c/o Samuel J. Roth, 145 W. 57 St., New York, N. Y., Industrial Center, Penna. R.R., Torresdale Ave., etc. and Pennypack St. $10,000,000.

▲ Tex., Brownsville—REFINERY EXPANSION, etc.—McBride Refining Co., Inc., Majestic Bldg., San Antonio, refinery expansion, from 7,500 to 20,000 bbls. daily capacity of crude oil products, $2,250,000; expansion of crude lines in vicinity of refinery, $90,000; oil and oil products loading and unloading facilities, $90,000.

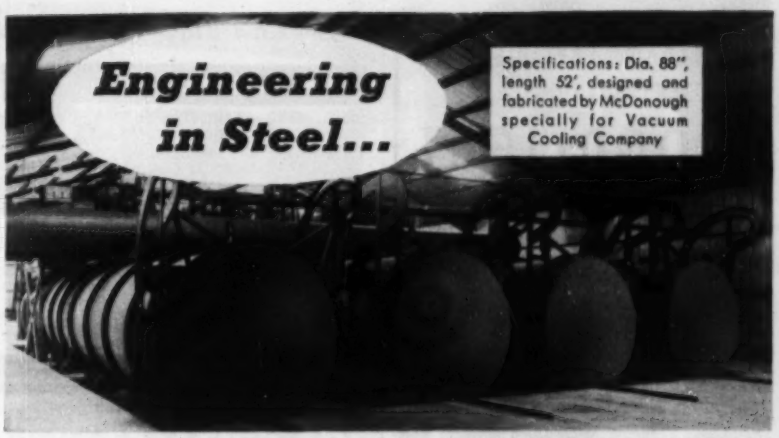
▲ Tex., Garland—WAREHOUSE—Safeway Stores, Inc., 4929 Beeman St., Dallas, 500,000 sq. ft. metal, steel, concrete warehouse, $3,500,000; mechanical repair shop, $90,000, 46-acre site in Garland Industrial area.

▲ Alta., Calgary—PLANT-OFFICE—Palace Bread Bakery Bldg., 8 Ave. and 9 St. W., plans by Stevenson & Dewar, 240 7 Ave. West, 2 story plant office.. $1,000,000.

UNCLASSIFIED

▲ Washington—TRANSMISSION LINES, etc.—Snohomish County Public Utility District, 3030 Colby St., Everett, two 100,000-v. transmission lines from Beverly Park Sub-station to Scott Paper plant, Everett; 30,000-kv substation at Scott Paper, $565,000; substation at Richmond Park-Edmonds, $95,000; rebuild 55-kv line from Monroe to Snohomish, $53,000; increase capacity East Marysville sub-station, $80,000; new line from Snohomish to Paine Field, $50,000; line extensions, $180,000; line replacements, $110,000.

▲ B. C., Vancouver—STREET LIGHTING—City Hall, ratepayers passed bylaw for ornamental street lighting over 5-year period. $1,030,000. CD 11/16/51.


Engineering in Steel...
Specifications: Dia. 88", length 52', designed and fabricated by McDonough specially for Vacuum Cooling Company

...now provides Garden Fresh Western Vegetables for Eastern Markets

Another McDonough Engineering achievement! These giant vacuum tubes handle tons of fresh vegetables a week. This new preserving process known as "Flash Cooling" actually holds vegetables at the peak of freshness so that they will arrive at Eastern markets "Garden Fresh." This is another typical example of the service McDonough Steel Company is capable of rendering to industry. McDonough is geared with both engineering staff and manufacturing facilities to meet the technical requirements of such industries as oil refineries, chemical manufacturing, food processing and mining as well as the general steel fabricated plate work of stacks, breeching, ducts, hoppers and bins.

Write today for our new Pictorial Booklet which illustrates the many fields of industry we have served through the years

McDonough Steel Co.
Founded January 1st 1924
ENGINEERS - FABRICATED STEEL PRODUCTS
800 - 75th AVENUE OAKLAND 21, CALIFORNIA TRINIDAD 2-3300

Would you use 1925 construction equipment today? No. Why not change over and equip your jobs with modern office trailers and cut costs.

CONTRACTORS' OFFICE TRAILER
Models 23½'—30'—35' Price $2170 to $3580
Birch finish, drafting table, 2 built-in desks with letter files & drawers, other conveniences. Can offer three years' finance plan. Write for pictures and plans.
TRAILER VILLAGE SALES, INC.
8642 Pulaski Highway, Baltimore 21, Md.
Phones: Murdock 7-2233

LEFAX POCKET SIZE TECHNICAL DATA BOOKS $1.25 EACH

● Printed on loose leaf, six hole, 6¾" x 3¾" bond paper, each book contains about 140 pages of technical data, presenting condensed, accurate and essential data for the student, engineer, technical worker and business man.

Architecture	Radio	Trig.-Log Tables
Home Heating	Television & FM	Analytic
Illumination	Electricity, AC	Chemistry
Electrician's Data	Electricity, DC	Highway
Builder's Data	AC Motors and Generators	Mechanics of Engineering
Lumber Data	Trans. Relays & Meters	Materials
Air Conditioning	Hydraulics	Power Trans.
General Math.	Surveying	Mach'y
Math. Tables	Mech. Drawing	Thermodynamics
Physics	Machine Design	Tables & Charts
Chemical Tables	Machinists Data	Phys. & Thermodynamic Data
Metals	Piping Data	Phys. & Org. Chemistry
Gen'l Chemistry	Surveying Tables	
Reinf. Concrete	Metallurgy	
Building Constr.		

● Write for FREE Catalogs (over 2000 listings). See for yourself how helpful LEFAX can be to you. Send $1.25 for each book, or $6 for any five books listed above, to:
LEFAX, Dept. ER25, Philadelphia 7, Pa.

THIS "COMPLETE" WELLPOINT PUMP more efficient, more economical, than more costly units

We call it the "Little Giant". Contractors call it a great big boon in a compact package. This little unit, with 6" suction and discharge, handles up to 1200 gpm — may be used for open sump work, for wellpointing and for jetting "Complete" wellpoints (if you're wise) into the ground. Its 1695 pounds are mounted in a 2-wheel chassis that is easily towed behind any vehicle. Sold at a surprisingly reasonable price; Rented if you prefer it that way. Particulars are free. Write today.
COMPLETE MACHINERY & EQUIPMENT COMPANY, INC.
36-40 11TH STREET
LONG ISLAND CITY, N. Y.
COMPLETE WELLPOINT SYSTEMS

5000 C. P. PORTABLE KEROSENE BURNING

FLOODLIGHT PROJECTORS

For Night Lighting

Widely used by contractors, municipalities, industrial plants, railroads, armed forces, and park districts

• ***Absolutely weatherproof.*** **Burns for 40 hours on 8 pints of kerosene—also burns #1 Diesel Oil. Gives a white light of 5000 c.p. and throws a beam about 150x75 ft. A fine light to have especially in emergencies when power is not available. Model F. L. 8 (left) is mounted on a 5 to 8 foot telescopic tripod with revolving base and weighs 60 lbs.—$90.00 F.O.B. Chicago. The model below is mounted on a short stand and weighs 30 lbs.—$72.50 F.O.B. Chicago.**

Specifications

Projector dimensions — 14½" wide — 11½" deep — 26" high
Dia. of Reflector.....14"
Center of Refl. above ground—short stand..18"
Center of Refl. above ground—tripod stand 8' max. 5' min.
Weight of Projector without oil.....22 lbs.
Weight of Projector with oil.....28 lbs.
Weight of short stand.....5 lbs.
Weight of tripod stand.....34 lbs.
Capacity (sufficient for about 40 burning hours) 6 pts.

• **INSPECTION LAMP**
Model AL-21

Excellent for use in confined spaces as a hand inspection lamp or as a small floodlight. Overall dimensions 9x9x 11-½"—weight 7-½ lbs.—dia. of Refl. 7"—oil capacity 1-½ pints—will burn 12 hours and gives a 2000 C.P. reflected light.

$36.00 F.O.B. Chicago.

WRITE FOR DETAILS

Let us send you descriptive circulars of our floodlight projector and inspection lamp.

WM. W. LEE and SON

20 EAST JACKSON BLVD.
CHICAGO 4, ILLINOIS

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
January 11 Connecticut
STREETS AND ROADS
January 11 Connecticut

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Platt Constr. Co., Inc.,** 99 First St., Cambridge, Mass. CA $1,907,000. HOSPITAL addns., alterations, Nichols St., FITCHBURG, MASS. City, Bd. Trustees, City Hall, Fitchburg, Mass. CD 10/13, under LB.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
January 12 Maryland
January 13 New Jersey & Pennsylvania
January 21 New York
STREETS AND ROADS
January 20 New Jersey January 21 New York

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Planet Constr. Co.,** 11 W. 42 St., New York 36, N. Y. CA $1,503,740. SCHOOL, P. S. 213, 67 Ave. between 230 and 233 Sts., BAYSIDE, N. Y. Dir. Bureau Constr., 49 Flatbush Ave. exten., Brooklyn 1, N. Y. Bids Dec. 7. CD 12/22, under LB.

▲ **Caristo Constr. Corp.,** 26 Court St., Brooklyn 2, N. Y. CA $4,269,000. East Queen HIGH SCHOOL, Hillside and Seward Aves. between 229 and 232 Sts., BELLEROSE, N. Y. Dir. Bureau Constr., 49 Flatbush Ave. exten., Brooklyn 2, N. Y. Bids Dec. 8. CD 12/22, under LB.

▲ **C.W.C. Constr. Corp.,** 105 Court St., Brooklyn 2, N. Y. CA $1,223,500, general constr. P. S. 34 (old 198) SCHOOL, Avenue D, E, 11 Dry Dock and E. 12 Sts., Manhattan Boro, NEW YORK, N. Y. Dir. Bureau Constr., 49 Flatbush Ave. exten., Brooklyn 2, N. Y. Bids Dec. 2. CD 12/8, under LB.

▲ **T. G. K. Constr. Co., Inc.,** 55 W. 42 St., New York 18, N. Y. CA $1,859,500. Junior HIGH SCHOOL 104, E. 21 St. between 1st and 2nd Aves., Manhattan Boro, E-221, NEW YORK, N. Y. Dir. Bureau Constr., 49 Flatbush Ave. exten., Brooklyn 1, N. Y. Bids Dec. 11. CD 12/22, under LB.

SOUTH

BIDS ASKED—BUILDINGS

▲ **Fla., Jacksonville**—GENERATING STATION—B.A. 1/28—City, City Hall, Talleyrand Electric Generating Station addn. $2,000,000. Plans deposit $85. Reynolds, Smith & Hills, P.O. Box 4817, engrs. CD 11/11/52.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NORTH CAROLINA**—State Hy. & P. Wks. Comn., Raleigh.
Wright Constr. Co., Box 1537, Columbus, Ga., CA $1,224,391, subgrade reinforced and c.conc. 16.96 mi. Hy. Proj. 4839, Durham and Wake Counties. Bids Dec. 15. CD 12/21, under LB.

▲ **Roy Richards Constr. Co.,** Carrollton, Ga., LB, $1,341,693 natural gas distr. sys., DUBLIN, GA. City, City Hall, Dublin, Ga. Bids Dec. 21. CD 12/15.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **J. A. Jones Constr. Co.,** 209 W. 4 St., Charlotte, N. C., CA $1,300,000. addnl. rehabilitation and conversion of POWDER FACILITIES, Radford Arsenal, RADFORD, VA. U. S. Eng., foot of Front St., Norfolk, Va. CD 12/3.

▲ **Williams Constr. Co.,** P.O. Box 1039, Columbus, Ga., Owner Builds, $1,200,000, Victory Drive SHOPPING CENTER, COLUMBUS, GA.

▲ **J. N. Bray Co.,** Valdosta, Ga., LB, $1,445,639, Negro high school and white high school, DOUGLAS, GA. Coffee Co. Bd. Educ., Douglas, Ga. Bids Dec. 22. CD 11/11.

▲ **Delta Constr. Co.,** and **Paul H. Keasling,** Waycross, Ga., CA, $1,146,000 (1) COUNTY TRAINING SCHOOL and (2) ELEMENTARY SCHOOL, SYLVANIA, GA. Screven Co. Bd. Educ., Sylvania, Ga. Bids Dec. 17. (Correction—location of project). CD 12/23, under LB, Ga., Newington.

▲ **A. C. Samford, Inc.,** P.O. Box 1229, Albany, Ga., CA, $1,043,000, HOSPITAL, SARASOTA, FLA. Sarasota Co., Sarasota, Fla. Bids Dec. 14. CD 12/22, under LB.

▲ **G. E. Bass Constr. Co.,** P.O. Box 1033, Jackson, Miss. CA Approx. $1,250,000 general contract PLANT, JACKSON, MISS. Century Mfg. Co., c/o John L. Turner & Assoc., archts., Medical Bldg., Jackson, Miss. CD 12/29, under LB.

▲† **U. S. Eng.,** 380 W. Broadway, Louisville, Ky. rejected bids Nov. 24, 9 story hospital, FORT KNOX, KY. LB sub base bid $6,693,500, total bid $7,649,120. CD 11/30, under LB.

MIDDLE WEST

BIDS ASKED—BUILDINGS

▲ **Ill., Chicago**—HOUSING—B.A. 1/19—Chicago Housing Authority, 608 S. Dearborn St., Zone 5, three apartment bldgs., Ida B. Wells Extension, Vincennes and 35 Sts. $1,950,000. Friedman, Alschuler & Sincere, 223 W. Jackson St., Zone 6, archts. CD 11/9.

SOON LETS CONTRACT—BUILDINGS

▲ **Ill., Melrose Park**—WAREHOUSE—Jewel Food Stores, Barrington, soon lets contract warehouse, North Ave. near 25 Ave. $4,000,000. A. Epstein & Sons, 2011 Pershing Rd., Chicago, Zone 9, archts. CD 7/22.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Major Corp.,** 2987 N. 5 Ave., Gary, Ind., Own Forces. $1,500,000, 140 HOMES and sewers, 47, 49, Georgia and Delaware Sts., GARY, IND.

▲ **Harry H. Verkler,** 645 N. Wilbur St., South Bend, Ind., LB, $1,060,747, Thomas Edison Grade SCHOOL, SOUTH BEND, IND. School City of South Bend, 228 S. St. Joseph St., South Bend, Ind. Bids Dec. 14. CD 11/2.

▲ **Clearing Industrial District,** 38 S. Dearborn St., Chicago, 3, Ill., CA, $1,000,000, cleanser mfg. FACTORY, 7100 W. 64 St., BEDFORD PARK, ILL. S.O.S. Co., 7100 W. 65 St., Bedford Park, Ill. John S. Cromelin, 6455 S. Central Ave., Chicago, Ill., archts. Awarded Dec. 14.

▲ **Algot B. Larson,** 3837 W. Lake St., Chicago 24, Ill., CA, $1,500,000, 150,000 sq. ft. ACCOUNTING BLDG., office addn., CHICAGO, ILL. United Airlines, 5959 S. Cicero St., Chicago 38, Ill. Skidmore, Owens & Merrill, 100 W. Monroe St., Chicago, Zone 3, archts. CD 11/11.

▲ **Herlihy Mid Continent Co.,** 135 S. La Salle St., Chicago 3, Ill. CA, $1,656,750 Parking GARAGE, Wacker Dr. near State St., CHICAGO, ILL. City, City Hall, Chicago, Ill. Bids Nov. 23. CD 11/30, under LB.

▲ **Village Development Co.,** 1141 W. Hibberd St., Wilmette, Ill., Own Forces. $1,800,000, 90 HOMES, sewers and water lines and paving, EVANSTON, ILL.

▲ **Libertyville Estates,** Libertyville, Ill. Own Forces, $2,200,000, 150 HOMES, LIBERTYVILLE, ILL. Robt. L. Shoyer, 4709 W. DeMing Pl., Chicago, Ill., archt.

▲ **Catsman Development Co.,** Samuel M. Catsman, pres., Flint, Mich. Owner Builds. $5,000,000. brick regional SHOPPING CENTER with parking, facilities South Dort Hy., FLINT, MICH. CD 12/22.

▲ **Krieghoff Co.,** 6661 French St., Detroit, Mich. CA Est. $1,000,000. brick, steel, concrete GYMNASIUM and AUDITORIUM, Grosse Pointe Blvd., GROSSE POINTE, MICH. Bd. Educ., S. T. Johnson, secy., 389 St. Clair Ave., Grosse Pointe, Mich. Bids Dec. 9. CD 11/19.

▲ **O. W. Burke Co.,** 1032 Fisher Bldg., Detroit, Mich. CA $1,175,777. general contract;
Shaw, Winkler, Inc., 14855 Ward St., Detroit, Mich. CA $357,300. mechanical contract 2 story, bsmt., special TREATMENT BLDG., Northville State Hospital, NORTHVILLE, MICH. State, A. N. Langius, dir. State Bldg. Dpt., Lansing, Mich. Bids Dec. 2. CD 10/27.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
January 12 Iowa January 20 Texas
STREETS AND ROADS
January 12 Iowa January 20, 21 Texas

▲ **TEXAS**—GAS LINE—Bids Asked—Texas Eastern Transmission Corp., Texas Eastern Bldg, Shreveport, La, 5.3 mi. 6 in. gas line from near Altair to owners "Provident City-Castor, La" main. near Altair, $120,000; 17 mi. 8 in. gas line from vicinity China to owners "Provident City-Beaumont" main line, near China, $775,000; 4,400 hp. compressor station, near Shelbyville, $575,000. CD 12/3.

BIDS ASKED—BUILDINGS

▲ **Tex., Tyler**—COURT HOUSE—B.A. 1/20—Smith Co., Court House, court house, $1,500,000. Thomas, Jameson & Merrill, 820 N. Harwood St., Dallas, archts. CD 5/19.

▲ **Tex., Arlington**—COMMUNITY or SHOPPING CENTER—Bids Asked—Arlington Development Co., c/o Robert B. Holland, Jr., Gulf States Bldg., Dallas, community or shopping center, $3,000,000. Arch Swank Assocs., 2025 Cedar Springs St., Dallas, archts. CD 12/23/52.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Guy H. James Constr. Co.**, First National Bldg., Oklahoma City, Okla. CA **$1,152,000.** intake and low service pumping station, KANSAS CITY, MO. City, City Hall, Kansas City, Mo. CD 11/30, under LB.

▲ **C. H. Harrison & Fred Hall**, Box 185, Waco, Tex. CA **$1,441,600,** est. $1,500,000. sewage disposal or treatment plant, WACO, TEX. City, City Hall, Waco, Tex. Bids Dec. 18. CD 12/28, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **Bennett Constr. Co.**, 3252 Roanoke Rd., Kansas City, Mo. LB **$1,899,239.** addnl. FACILITIES. Part IV, Lake City Arsenal, Inv. 25-066-54-13, near INDEPENDENCE, MO. U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo. Bids Dec. 17. CD 11/16.

▲† **Alport Constr. Co.**, 218 Tile Guaranty Bldg., St. Louis 1, Mo. CA **$1,648,800.** rehabilitation and modification of Bldg. 102, St. Louis Ordnance Plant, 4300 Goodfellow Blvd., ST. LOUIS, MO. U. S. Eng., 601 Davidson Bldg., Kansas City, Mo. CD 12/11, under LB.

▲ **Brown & Root, Inc.**, Box 3, Houston, Tex., CA $1,100,000 reconstr. main production PLANT, 125,000 sq. ft.; CA **$200,000.** addnl. storage or warehousing; CA **$350,00,** repair shop for operations and equip.; CA **$325,000,** office bldg., GAINESVILLE, TEX. Grand total $1,975,000. National Supply Co., Gainesville, Tex. CD 9/2.

▲ **Mayflower Investment Co.**, c/o Carr P. Collins, 912 Commerce St., Dallas, Tex. Owner Builds. **$1,250,000.** Unit 2, 1 story, masonry SHOPPING CENTER, concrete pier and beam fdn., IRVING, TEX. CD 11/4.

▲ **Ralph M. Parsons Co.**, 617 S. Olive St., Los Angeles, Calif., CA Est. **$3,950,000.** design and construct large gas refining and sulfur recovery PLANT, MANDERSON, WYO. General Petroleum Corp. (Socony-Vacuum Oil Co., Gulf Oil Corp., Stanolind Oil & Gas Co., Sohia Petroleum Co., Roy Booth Shannon Oil Co., G. & N. Oil Co., and Mule Creek Oil Co.), 108 W. 2 St., Los Angeles, 12, Calif. CD 3/13/52.

FAR WEST

BIDS ASKED—BUILDINGS

▲ **Calif., Los Angeles**—HOUSING—B.A. 2/23—Housing Auth. of City of Los Angeles, 1401 E. First St., Jordan Downs reconstruction, Proj. No. CA1-4016, between 97 and 103 St. at Grape St., **$2,000,000.** Extended date. CD 12/2.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Connolly-Pacific Co.**, 1925 Mater St., Long Beach, Calif., CA, **$1,769,349,** 2 jetties and raising 2 jetties, LONG BEACH, CALIF. City, City Hall, Long Beach, Calif. Bids Dec. 17, awarded Dec. 22. CD 12/23, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Macdonald Building Co.**, 1517 S. Tacoma Way, Tacoma, Wash. LB, **$1,749,664,** general contract; **H. Chapman Plumbing & Heating Co.**, 2145 South "K" St. Tacoma, Wash., LB, **$463,018,** mechanical work; **Electric Constr. Co.**, 1650 Center St., Tacoma, Wash., LB, **$465,728,** wiring for new STATE OFFICE BLDG., OLYMPIA, WASH. State Capitol Com., Olympia, Wash. Bids Dec. 22. CD 11/16.

CANADA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **BRITISH COLUMBIA**—Province of B. C., Douglas Bldg., Victoria,

E. Anderson Constr. Co., Hope, B. C., CA, **$1,018,914** construct 6.24 mi. Burnside Road-Goldstream Section Trans-Canada Hy., Esquimalt Electorial District. Bids Dec. 4. CD 12/14, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Bird Constr. Co. Ltd.**, 12525 127 Ave., Edmonton, Alta., CA, **$1,000,000,** 7 story, bsmt., 186x114 ft., rein.-con. APARTMENT, Jasper Ave. near 110 St. EDMONTON, ALTA. Savoy-Plaza Ltd., c/o Alex S. MacRae Ltd., 10120—100 A St., Edmonton, Alta. Peter Caspari, 496 Church St., Toronto, and Malcolm D. Macleod, 8 Mortlake Block, Edmonton, Alta., archts. Awarded Dec. 18.

▲ **Louis Fecteau**, 104 St. Jean St., Quebec City, Que., CA, **$1,300,000,** 100-bed HOSPITAL, HAUTERIVE, QUE. L'Hotel Dieu D'Hauterive, c/o Hospitaliers, St. Joseph, Hauterive, Que. L. Desgagne, 369 Racine St. E., Chicoutimi, Que., archt.

ALASKA

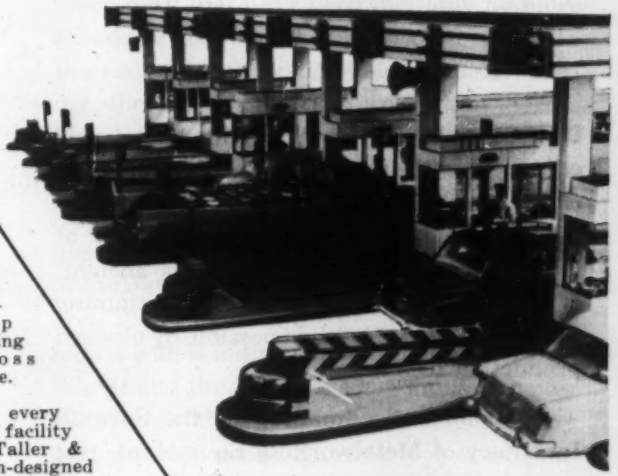
HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Stewart & Lloyds**, Glasgow, Scotland, CA Approx. **$2,800,000.** 615 mi. 8⅝ in. pipe supply for gasoline pipe line, Yukon and Canada, Anchorage, ALASKA. U. S. Eng., Anchorage, Alaska. CD 11/25/52.

(Proposal Advertisements see pp. 95 and 96)

tolls take less time
in busy New England with
TALLER & COOPER equipment



Taller & Cooper toll collection installations keep traffic flowing smoothly across this busy bridge.

Here, and at every other major toll facility in America, Taller & Cooper custom-designed toll collection equipment guarantees accuracy, dependability, and speed of collection.

Taller & Cooper manufactures integrated toll collection systems combining the most advanced collection equipment with all-steel fabricated Booths and Canopies. They are weather-proof, attractive, and completely *safe* for money and for personnel.

Taller & Cooper toll collection equipment at Charter Oak Bridge, Hartford, Connecticut

Write today for design and construction details.

TALLER & COOPER, INC.

ENGINEERS • MANUFACTURERS

77 FRONT STREET ● BROOKLYN 1, N. Y.

TOLL BOOTHS
TOLL COLLECTION
SYSTEMS

TALLER & COOPER TOLL COLLECTION EQUIPMENT IS USED ON EVERY MAJOR TOLL FACILITY IN THE U. S.

No Room for Industrial Complacency

Do you believe that American industry is equipped with remarkably up-to-date and efficient machinery? If you do, you are mistaken. The fact is that a large share of American industry's equipment is ancient, of obsolete design and incapable of attaining the efficiency that is made possible by modern production techniques.

This fact is documented by the Seventh Inventory of Metalworking Equipment, just completed by AMERICAN MACHINIST, a McGraw-Hill publication. In brief, AMERICAN MACHINIST shows that:

1. More than half (56%) of American industry's most basic production equipment—machine tools and metal-forming units—is overage, and much of it is so old that it has very limited usefulness.

2. Since Korea, the situation has become dangerously worse.

Facts vs. Plausible Theory

These conclusions contradict the widely-held impression that America's industrial equipment is in better physical shape than ever before. The prevalence of this impression is not surprising. We, as a nation, have spent about $125 billion for new industrial plant and equipment since World War II. That is more than in any previous period in our history. During 1953, American industry invested $21 billion in new plant and equipment, an all-time high. From this, it would be reasonable to infer that our industrial plant and equipment must be in fine condition.

But the facts do not support that inference with respect to the machine tools and other metalworking equipment that are so crucial to our economy in war and peace. Here are the key findings of the AMERICAN MACHINIST Inventory:

(1) More than one million machine tools—out of a total of less than two million in the metalworking industries—are at least ten years old. Many of these, after day and night operation

during the war years and the recent rush to rearm, are actually much older production-wise than their age in years indicates. In most cases, these machines are unable to produce goods as efficiently as modern equipment can, thus needlessly increasing costs.

(2) Almost one out of five machine tools is more than twenty years old. Most of these machines are so outdated by modern standards that they have little more than scrap value. And an even larger portion of our metal-forming equipment (presses, brakes and shears, bending and straightening machines) has passed the 20-year mark and is beyond normal retirement age.

(3) Two out of three machine tools are of designs predating World War II, though many of them have been built since the war. Thus, two-thirds of our machine tools fail to incorporate the many major postwar improvements in design and operating methods.

(4) Never before has outmoded high-cost equipment been so widely diffused throughout American industry. In every one of fifteen major divisions of metalworking production, more than 45% of the machine tools are at least ten years old.

(5) Not since the depression days of the 1930's has the average age of machine tools risen so rapidly as it has in the past four years. Today, 55% are ten years old or older, compared with 43% just before Korea.

Quality vs. Quantity

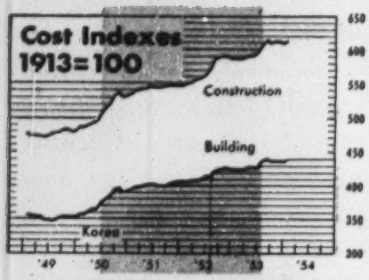
Why has the condition of our metalworking equipment been steadily deteriorating since the end of World War II? Part of the explanation lies in the fact that, in the immediate postwar years, production of metalworking equipment lagged behind the production of industrial equipment generally. The larger part of the explanation, however, lies in the tremendous postwar expansion of the American economy. This expansion, which has more than doubled our total industrial capacity, has imposed requirements for metalworking machinery that have been met only by more extensive use of old and obsolete tools. In the critically important field of metalworking, the job of providing up-to-date tools is bigger than it ever has been.

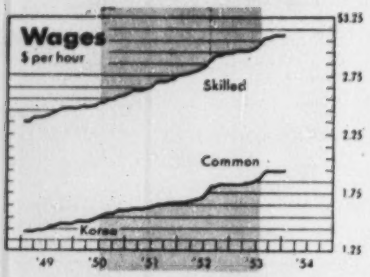
There are those who argue that the time has come to cut back investment in new industrial plant and equipment and divert more of the national income into current consumption. They cite both the great increase in the nation's total industrial capacity since World War II and the fact that some industries now have more than ample producing capacity to meet their needs. But this type of calculation leaves out the *efficiency* of that producing capacity.

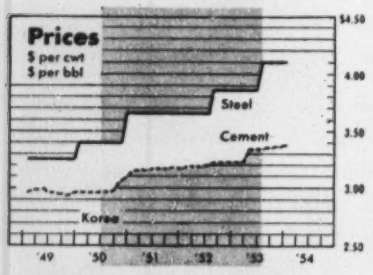
The AMERICAN MACHINIST Inventory makes it manifest that in the key field of metalworking we are alarmingly short of first-rate, low-cost producing capacity. If we fail to remedy this situation by speeding the replacement of obsolete tools, it will be at the peril of our prosperity, at the peril of a sustained increase in our standard of living and of our national security.

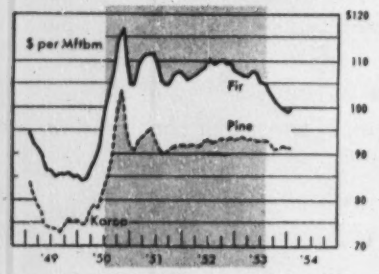
McGraw-Hill Publishing Company, Inc.

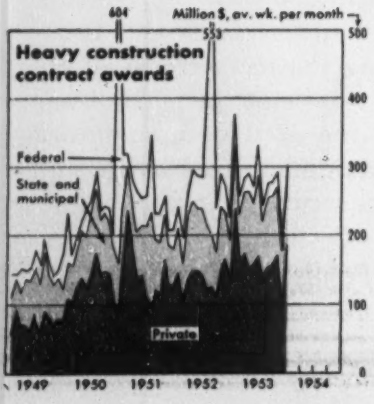
JANUARY CONSTRUCTION SCOREBOARD











ENR INDEXES (1913=100), 20-cities' average	1954 Jan.	% Change from last Month	% Change from last Year
Construction Cost	614.04	+0.4	+4.4
Building Cost	436.88	+0.2	+2.8
WAGE RATES, 20-cities' average			
Common	$1.944	+0.6	+6.8
Skilled (aver. 3 trades)	3.095	+0.3	+5.2
Bricklayers	3.364	0.0	+2.9
Structural Ironworkers	3.065	+0.3	+6.9
Carpenters	2.855	+0.5	+6.1
MATERIAL PRICES, 20-cities' average			
Cement, bulk, per bbl	$3.377	+0.4	+4.9
Structural Steel, (3-mill aver.), per cwt	4.100	0.0	+6.5
Sand, per ton	2.202	+0.6	+3.9
Lumber, 2x4 Fir, per M. ft. bm	99.819	+0.6	+6.8
Lumber, 2x4 Pine, per M. ft. bm	91.050	−0.3	−2.3
Common brick, per M	32.911	0.0	+4.1
Ready-mixed concrete, per c. y	11.979	0.0	+5.2
Structural Clay Tile, 3x12x12 per M	159.741	0.0	+3.5

CONTRACTS AWARDED (Millions)	1953 Dec. 5-Weeks	1953 12-Mos. 53-Weeks	% Change from '52 Dec. 4-Weeks	% Change from '52 12-Mos. 52-Weeks
Total U. S. (ENR reported)	$1,510.9	$15,170.9	+33.2	− 5.1
Private	929.3	8,665.3	+40.2	+19.5
Public	581.6	6,505.6	+23.5	−25.6
Federal	76.4	1,417.6	−53.1	−69.2
ENR Volume Index, '13 = 100	547	506	+29.9	−12.3
NEW CAPITAL (Millions)				
Total	1,144.0	11,820.3	+76.5	−25.2
State & Municipal Bond Sales	724.3	5,031.1	+65.4	+43.6
Corporate Security Sales	413.2	4,308.7	+109.1	+18.2
Federal (non-federal work)	6.5	884.9	−48.0	− 2.9
Federal (federal work)	.....	1,595.6	.....	−79.4

MATERIAL SHIPMENTS & LABOR SUPPLIES (Millions)	1953 Oct. (O) Nov. (N)	1953 10-Mos. 11-Mos.	% Change from '52 Mo.	% Change from '52 Yr.-Cum.
Cement bbls, Bu. of Mines	27.556(O)	227.248(10)	+ 1.2	+ 4.4
Fabr. Struc. Steel, tons AISC	.257(N)	2.850(11)	+14.7	+16.8
Lumber, mil. ft. bm., NLMA	3.246(O)	32.558(10)	− 9.8	+ 2.5
Lumber Prod., mil. ft. bm., NLMA	3.536(O)	33.143(10)	− 1.0	+ 3.9
Contract Constr. Employ., BLS	2.611(N)	2.529(11)†	− 1.4	− 1.8

† Average

ENR INDEX REVIEW

	Construction Cost 1913=100	Construction Cost 1949=100	Building Cost 1913=100	Building Cost 1949=100	Volume 1913=100	Volume 1949=100
1953						
Jan.	587.87*	123.24*	425.04	120.82	714	206
Feb.	587.79*	123.22*	425.24	120.88	480	139
Mar.	588.04*	123.27*	424.89	120.78	437*	126*
Apr.	590.13*	123.71*	426.45	121.22	524*	151*
May	589.63*	123.61*	426.29	121.18	499	144
June	593.77*	124.47*	426.27	121.17	572	165
July	604.70*	126.77*	435.21*	123.73*	447	129
Aug.	612.67*	128.44*	436.98*	124.22*	487	141
Sept.	610.97*	128.08*	436.10*	123.97*	487	141
Oct.	611.76*	128.25*	436.31	124.03	528	153
Nov.	611.92*	128.28*	436.34	124.03	354	102
Dec.	611.48	128.19	435.90	123.91	547	158
Av.	600.06	125.79	430.92	122.49	506	146
1954						
Jan.	614.04	128.72	436.88	124.19	...	...

* Revised.

what's new in construction?

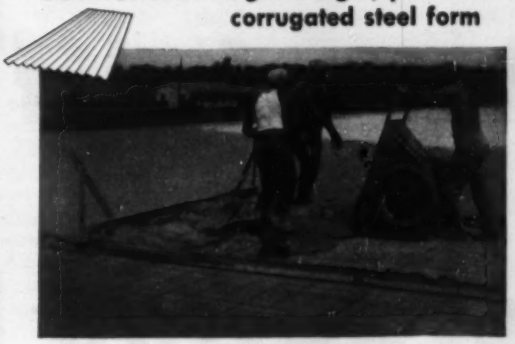
"TOUGH-TEMPER" STEEL AND A NEW FAMILY OF PRODUCTS HELP DESIGNERS AND INVESTORS, ALIKE

Here's How: "Tough-temper" steel is the answer. Yes, a steel with extremely high strength is one of the reasons that the Granco family of four building products does a better job for architects, engineers, and new building owners.

The new material, known as "tough-temper" steel does not require critical alloying to gain high-tensile strength. Instead, controlled cold-rolling with strain hardening as the result, gives high and unusual physical properties. The finished product, containing this steel with an ultimate strength over 100,000 psi, results in simplified, economical construction, savings in material and labor.

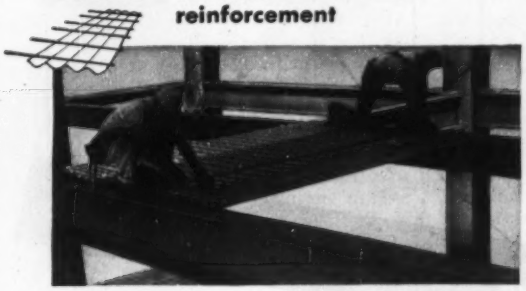
For additional information, write Department ER-4, Granco Steel Products Co., Granite City, Illinois. Your request will receive prompt attention.

CORRUFORM—light weight, permanent corrugated steel form



for concrete floors and roofs . . . stronger by far than conventional corrugated steel of same shape and weight . . . functions as a base for thin concrete slabs in steel joist floors and roofs . . . thinner, stronger slabs mean construction economy . . . concrete saving through lack of sag or leakage . . . speed and ease of placing Corruform also adds economy.

COFAR—combined form and reinforcement



Deep-corrugated steel, 100,000 psi and stronger (main reinforcement), and T-wires (temperature reinforcement) in one manufactured product . . . serves as both permanent form and reinforcement . . . completely eliminates wood forms . . . provides all the positive steel needed in the structural concrete slab . . . saves months in new construction.

TUFCOR—Permanent, non-combustible roof construction

for light-weight, insulating concrete roofs—for spans up to 7 feet. To use Tufcor: (1) Weld hi-strength galvanized Tufcor sheets to steel frame of roof; (2) Place 2" or more, of concrete fill on steel shell of Tufcor; (3) Put a built-up roof over insulating concrete fill. Result: An economical roof, with an attractive underside, that will last the life of the building.

FLAT TOP ROOF DECK—rotary press formed

to insure uniform pattern. Wide cover width reduces handling and erection costs . . . fewer side laps cut welding time and offer greater support for concentrated loads. Ideal relationship between rib and flat provides maximum strength and cover per pound of steel. The characteristic pattern of Roof Deck precludes the use of "tough-temper" steel in forming but is manufactured from high-grade cold-rolled sheet steel. 35 sq. ft. covered per sheet placed.

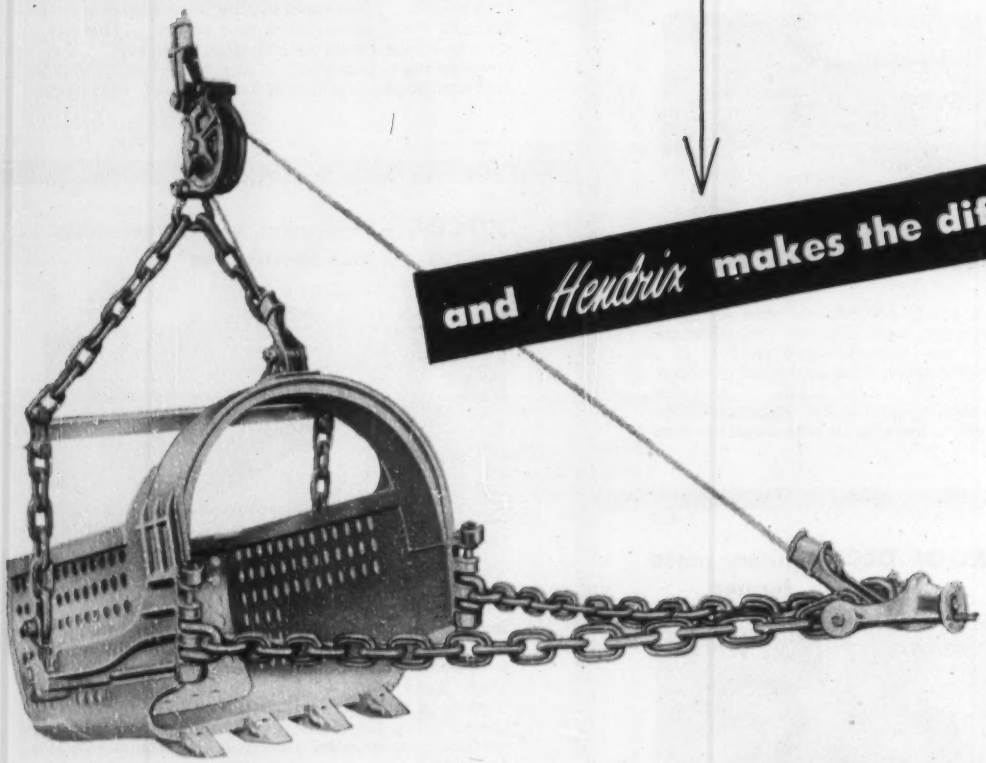
GRANCO

STEEL PRODUCTS CO.

(Subsidiary of Granite City Steel Co.)

GRANITE CITY, ILLINOIS

there's a lot of difference in dragline buckets



and *Hendrix* makes the difference

⅜ to 40 Cubic Yards

A TYPE AND SIZE FOR EVERY DIGGING PURPOSE

Hendrix Buckets available without perforations on special order.

HENDRIX MANUFACTURING CO., Inc.

MANSFIELD, LOUISIANA

Heavy December awards close a big year for construction

The construction industry finished off 1953 in impressive style. Total awards reported to ENGINEERING NEWS-RECORD and the CONSTRUCTION DAILY were $1,511 million. That is the biggest month since last January, and the largest volume for December since 1950, when Atomic Energy Commission awards helped set a record for the month.

December's impressive showing was largely due to two huge contracts: a $300-million taconite development at Aurora, Minn. (ENR Dec. 10, p. 145), and a $100-million hot strip mill expansion at the McLouth Steel Corp. plant in Trenton, Mich.

Total awards for 1953 were $15.2 billion, 5% below the record set last year but still the second biggest year on record. In spite of predictions of a 1954 recession, the situation in the construction industry is still very healthy. For a complete story on 1953 awards, see page 21.

• **Private work**—Taking December's awards by categories, you can see from the table (below) that total private contracts were $929 million, and industrial awards totaled $569 million. Due to the two big projects, December was the largest month for industrial awards since February 1951, when there was a large volume of defense construction work.

Commercial building and mass housing gained moderately above volume in November—which was a poor month. Commercial contracts averaged $18 million a week in December, 20% above November; but they were 45% below December of 1952. Private housing awards in December averaged $47.8 million per week. That's a 10% rise over November, and 13% below December 1952.

• **Public work**—Public awards were up 50% from November, for a total of $582 million. A big factor in this gain was the $70-million contract for the Mackinac Bridge (ENR Dec. 24, p. 56), previously awarded in March but withdrawn from ENR's scorecard when the bridge authority proved unable at that time to get financing.

Waterworks contracts rolled up a $32.8-million total in December, the best month in 1953. Earthwork and waterway awards rose sharply to $38.9 million. Highways gained slightly above November, the first gain in three months. Public buildings, other than housing, held about even with the November rate. The bridge category did well, not only because of Mackinac but because of a sizable volume of smaller bridge projects.

Federal awards slid a little lower in December, with a weekly average of about $15 million. This is the lowest weekly rate for any month this year, and is about half the volume in December 1952.

ENR's cost indexes move up after four months' stability

After remaining almost stationary for four months, construction costs have moved up slightly for January. Higher wage rates in New York City and Seattle, plus cement boosts in Cleveland and Kansas City, and lumber price increases in five cities account for the change. Fir lumber prices turned upward after a long decline.

ENR's 20-city Construction Cost Index for January is 614.04, based on 1913 = 100. This is 0.4% above December, and is a new high. The index has risen 4.4% in the past year.

The Building Cost Index for January, also based on 1913 = 100, is 436.88, up 0.2% from December 1953. This index is still a hairline

(*Continued on page 94*)

ENGINEERING CONSTRUCTION CONTRACTS—DECEMBER 1953

ENGINEERING NEWS-RECORD *reports continental U. S. Construction projects of the following minimum costs—Waterworks, excavation, drainage and irrigation, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000*

Five Weeks—Thousands of Dollars (000 Omitted)

	December, 1953							U. S. Cumulative Twelve Months		% Change	Canada
	New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	Total U. S.	1953 (53 weeks)	1952 (52 weeks)	'52 to '53 Avg. Wk.	December 1953
Public Works											
Waterworks	12,107	2,359	2,150	6,886	7,976	1,347	32,825	247,011	231,058	+5	3,009
Sewerage	1,703	5,643	2,451	9,166	8,271	3,324	30,558	431,200	304,372	+37	1,705
Bridges	3,658	18,105	3,511	83,125	6,171	4,971	119,541	743,350	395,211	+85	456
Earthwork and drainage	116	556	1,151	1,028	21,709	14,367	38,927	374,251	495,908	−25	2,806
Streets and roads	11,095	45,216	16,134	30,792	24,694	18,155	146,086	1,792,452	1,396,532	+26	775
Public buildings, residential	.....	5,926	396	4,933	567	.....	11,822	375,505	606,272	−39	1,318
Other public buildings	15,619	37,805	21,541	21,930	41,264	21,221	159,380	1,736,483	4,292,575	−60	10,741
Unclassified	5,567	1,707	16,694	3,202	8,616	6,656	42,442	805,325	854,698	−8	2,557
Total public	49,865	117,317	64,028	161,062	119,268	70,041	581,581	6,505,577	8,576,626	−26	23,427
Federal government (included in above classifications)	6,017	5,030	5,788	2,628	33,740	23,180	76,383	1,417,572	4,501,049	−69	3,127
Private											
Bridges	60	.....	.....	.....	.....	.....	60	8,925	17,989	−51	.....
Industrial buildings	1,988	53,086	16,920	134,316	357,473	5,501	569,284	3,178,129	2,722,369	+15	25,221
Mass housing	4,560	141,811	15,614	29,019	35,764	12,415	239,183	3,464,156	3,001,941	+13	30,640
Commercial buildings	5,025	38,113	9,485	14,071	15,013	8,746	90,453	1,156,937	843,519	+35	7,281
Unclassified	.....	845	11,201	550	17,305	459	30,360	857,169	526,800	+60	5,921
Total private	11,633	233,855	53,220	177,956	425,555	27,121	929,340	8,665,316	7,112,618	+20	69,063
Total Engineering Construction:											
December, 1953—5 weeks	61,498	351,172	117,248	339,018	544,823	97,162	1,510,921	.....	.....	.....	92,490
November, 1953—4 weeks	44,756	171,780	146,034	168,848	177,023	85,874	794,315	.....	.....	.....	101,729
December, 1952—4 weeks	36,602	199,598	195,671	183,186	185,992	105,927	906,976	.....	.....	.....	55,212
Twelve Months—1953	634,961	3,400,193	2,522,889	3,392,382	3,439,183	1,781,285	.....	15,170,893	.....	−5	1,282,357
Twelve Months—1952	623,577	2,645,399	3,721,671	3,437,626	3,405,865	1,855,106	.....	.....	15,689,244	.....	1,182,456
% Change '52 to '53 (Avg. Week)	−0.1	+29	−33	−3	−1	−6	.....	.....	.....	.....	+6

below the record high of 436.98 reached last August. The Building Cost Index has climbed 2.8% in the last year.

On the price side, one sensitive indicator shows a decline in recent months. A comparison of actual cubic ft prices paid to contractors by the New York City Housing Authority shows costs were 94.1 cents per cu. ft. on its latest project, finished last month. On its last job, finished in September, costs were $1.045 per cu. ft. The difference may be accounted for by sharper bid competition.

Westinghouse gives away near-finished glass plant

It's not very often that a company builds an industrial plant and decides not to use it. But it's practically unheard of for the company then to give the plant away.

Early last November, Westinghouse Electric Corp. halted construction on a glass plant it was putting up near Hot Springs, Ark., to provide glass for its Lamp Division at nearby Little Rock. It decided that existing suppliers could furnish the glass just as well. The company had already put $750,000 into the plant and its 31-acre site, including some machinery, and the plant was nearly finished.

While Westinghouse management wondered what to do with the property, Gov. Francis Cherry of Arkansas visited New York City to talk to eastern businessmen about the advantages of locating in his state. Westinghouse then decided to give the plant to the State of Arkansas as a Christmas gift, in compensation for the loss of the 500 jobs the glass plant would have created. Arkansas can use the property to attract another industry to the area.

Of course, the $750,000 isn't a total loss. The machinery can be taken out of the plant and the remainder of the loss is tax-deductible. Furthermore, there are rumors in the lamp trade that the Westinghouse glass project had put pressure on glass suppliers to keep their prices down.

L. A. contractor introduces precast concrete buildings

A Los Angeles contractor is now offering businessmen something new in the way of prefabricated industrial buildings: a series of standardized structures using precast concrete wall panels.

Van Wagoner-Swan, Inc., estimates that its standard concrete buildings can be put up for from 5% to 8% less than the same building erected as a "custom" job. The five buildings in the series come in 20-ft modules. Sizes range from 60x100 to 100x200. Six variations are offered for exterior design. Structural framing may be steel or concrete.

Natural gas firms will spend $1 billion a year until 1956

The natural gas industry expects to spend on new construction an average of about $1 billion a year from 1953 through 1956. That was the word last week from the American Gas Assn. The industry expects it will be selling about 26% more heating units in 1956 than it did last year.

Of the $4-billion total, about $1.9 billion will be spent for transmission lines and $1.4 billion for new distribution facilities. The rest will go for production, underground storage, and general plant expansion.

AGA figures that the industry will need a total of 7.3 million tons of steel pipe for its expansion program during the four-year period.

Business briefs . . .

• **American Telephone & Telegraph Co.** and its subsidiaries plan to spend about the same for plant expansion in 1954 as they did in 1953. Last year, they spent about $1.4 billion. Cleo Craig, AT&T president, says there are still 430,000 people waiting for phones and about a million party-line customers who want better service.

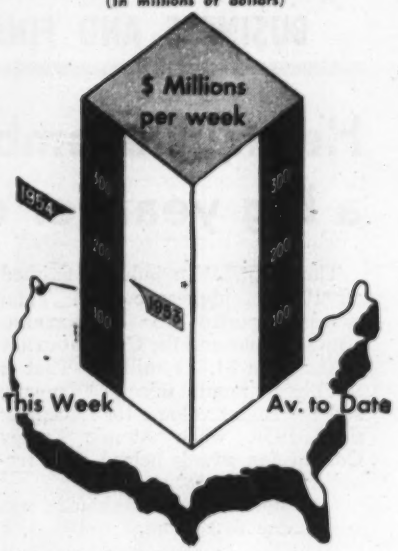
• **Home mortgages** on one-to-four-family units were up almost $7 billion during 1953, according to the Department of Commerce. Total mortgage debt is now about $65 billion, compared with about $58 billion at the start of the year. Overall equity in mortgaged homes was about 55% of market value in 1953, Commerce estimated.

• **Air conditioning sales** totaled about $1¾ billion in 1953, up about half-a-billion dollars from 1952, according to Cloud Wampler, president of Carrier Corp. Speaking for the industry, Wampler said that this was the biggest climb in the industry's history, about double the rise in 1952.

• **Mackinac Bridge bonds** will be offered to the public Jan. 14 by the underwriting syndicate which bought them before Christmas (ENR Dec. 24, p. 56). The syndicate will sell $79.8 million of Series A bonds, and will hold off $20 million Series B until later.

Activity This Week

As reported to ENR (In millions of dollars)



Amount of contracts let

	This Week	Cumulative 1 wk 1954	1953	% chge
Federal	$11.6	$11.6	$21.4	−46
State and municipal	135.3	135.3	80.5	+68
Total pub.	146.9	146.9	101.9	+44
Total priv.	78.9	78.9	83.1	−5
U. S. total	**$225.8**	**$225.8**	**$185.0**	**+22**
Contracts by type of work				
Waterworks	$7.7	$7.7	$4.7	+64
Sewerage	7.0	7.0	4.0	+75
Bridges	6.9	6.9	2.5	+176
Highways	59.8	59.8	36.4	+64
Earthwork, waterways	4.1	4.1	2.3	+78
Buildings:				
Public, excl. hsg.	50.7	50.7	24.2	+110
Housg., pub.	2.5	2.5	12.0	−79
Housg., priv.	34.4	34.4	52.6	−35
Commercial	18.7	18.7	9.4	+99
Industrial	22.3	22.3	20.1	+11
Unclassified	11.7	11.7	16.8	−30
Total	**$225.8**	**$225.8**	**$185.0**	**+22**

• 3-day week.

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

New capital for construction

	Week of Dec. 31 1953	Cum 53† Wks Year to date Total 1953	% chge 1952-53
Corporate securities	$0.1	$4,308.7	+20
State and municipal:			
Excluding housing	25.1	4,748.0	+52
Housing	13.4	283.1	−11
Federal loans	...	114.0	−67
Federal aid	...	770.9	+40
Total non-federal	**$38.6**	**$10,224.6**	**+29**
Federal approp.:			
In U. S.	...	$1,566.7	−79
Outside U. S.	...	28.9	−85
Total new capital	**$38.6**	**$11,820.3**	**−24**

† 53 weeks in 1953; 52 weeks in 1952.

ENR indexes		Base years = 100 1913	1926	1949
Constr. cost	Jan '54	614.04	295.17	128.72
	Dec '53	611.48	288.45	128.19
Bldg. cost	Jan '54	436.88	236.16	124.19
	Dec '53	435.90	235.63	123.91
Volume	Dec '53	547	222	158
	Nov '53	354	144	102

OFFICIAL PROPOSALS

Bids: January 21, 1954

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 21st day of January 1954, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 1				
		G. L. Nickerson, District Engineer, 353 Broadway, Albany, N. Y.				
Greene	FARC 54-1	Shandaken-Lexington Pt. 2, SH1774-A Project F-992(4)	0.82	Asp. Conc. Ty. 1A, Opt.=0.78 Mi. Misc. Work=0.04 Mi.	$5,500 Plans $10	$101,000
		DISTRICT No. 4				
		E. G. H. Youngmann, District Engineer, Barge Canal Terminal, Rochester, N. Y.			$11,000	200,000
Livingston	F.A.S.S. 54-2	Pine Tavern Corners—Route 36 (Co. Rd.) Proj. S-394(1)	2.26	Bit. Mac. Ty. 1-A	Plans $10	
Monroe	FA.C. 54-1	Rochester City: Innerloop (Front St. to Main St. West) F.A.C. 52-12 Proj. U-1089(3) Cont. 2	0.15	Traffic Signal System	$900 Plans $10	16,000
		DISTRICT No. 5				
		C. R. Waters, District Engineer, 65 Court Street, Buffalo, New York.				
Erie	G.I.S.P. 54-1	Grand Island: West River Parkway (East Service Road)	7.36	Surface Treatment=3.52 Mi. Asp. Conc. Ty. 1A, Opt.=3.64 Mi. Misc. Work=0.20 Mi.	$2,100 Plans $10	38,000
		DISTRICT No. 8				
		J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.			$450	8,000
Columbia	T.S.P. 54-1	Taconic State Parkway (Relocated C. R. 12)	1.48	Improvement of Drainage Facilities	Plans $10	
Dutchess	B.A. 54-1	Kingston-Rhinecliff Bridge: East Approach Cont. 7	1.34	Grading and Drainage	$30,000 Plans $15	549,000
		DISTRICT No. 10				
		M. E. Goul, District Engineer, Montauk Highway, Babylon, L. I., New York				
Nassau and Suffolk	N.S.P. 54-1 C.A.P. SP54-1 S.A.G. SP54-1	Northern State Parkway Sagtikos State Parkway Captree State Parkway	24.77	Drainage, Planting and Fencing	$12,000 Plans $10	233,000
Suffolk	D.A. 54-1	Wading River-Manor Road & Swan Pond Road (Town Roads Access to Peconic River Plant) Proj. AD-5(2)	3.16	Asp. Conc. Ty. 1-A, Opt.	$18,000 Plans $15	330,000
		DISTRICT No. 1				
		G. L. Nickerson, District Engineer, 353 Broadway, Albany, N. Y.				
		DISTRICT No. 2				
		L. Ketchum, District Engineer, 109 No. Genesee Street, Utica, N. Y.				
		DISTRICT No. 3				
		William Robinson, District Engineer, 301 E. Water Street Syracuse, N. Y.				
		DISTRICT No. 4				
		E. G. H. Youngmann, District Engineer, Barge Canal Terminal, Rochester, N. Y.				
		DISTRICT No. 5				
		C. R. Waters, District Engineer, 65 Court Street, Buffalo, N. Y.				
		DISTRICT No. 8				
		J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.				
Albany Greene Schen., Herk., Mad., Mont., Oneida, Cay. Onon., Seneca, Gen., Monroe, Ont., Erie, Oran., Rock., Ulster, West.	T.U.B. 54-1E	New York State Thruway—Hudson, Catskill, Mohawk and Ontario Sections (Electrical Work at Toll Plazas)	....	Furnishing and Installing Electrical Facilities at 40 Toll Plazas	$43,000 Plans $25	775,000

Note: Plans and proposals for T.U.B. 54-1E may be procured only at our Albany and New York City offices.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
SUPT. OF PUBLIC WORKS

Bids: February 11, 1954

Suspended Structure and Decks on Anchorages Contract No. 6

DELAWARE RIVER PORT AUTHORITY
Administration Building
Camden, New Jersey

Sealed bids will be received for the construction of Suspended Structure and Decks on Anchorages for a Suspension Bridge over the Delaware River connecting Packer Avenue, in Philadelphia, Pennsylvania and Gloucester City, New Jersey, known as Contract No. 6, at the office of the Executive Director of the Delaware River Port Authority, Administration Building, Bridge Plaza, Camden, New Jersey until 1:30 P. M. Eastern Standard Time, February 11, 1954 at which place and time they will be publicly opened and read by the Authority.

A more complete description of the work and full information for bidders are given in the Contract Documents and Specifications for this Contract, which may be obtained upon a deposit of $10.00 which will be remitted upon receipt of bid or the return in good condition of the copies so taken within thirty days after the opening of bids.

The Bid must be accompanied by a certified check in the sum of Three Hundred and Fifty Thousand Dollars ($350,000.00) payable to the order of the Delaware River Port Authority and drawn upon a National or State Bank or Trust Company having an office or place of business either in Philadelphia, Pennsylvania or Camden, New Jersey, and must not be enclosed with the sealed bid. The surety's consent must be shown. The bidder to whom the contract is awarded will be required to furnish a performance and Labor and Materialmen's Bond in the sum of 100 percent.

The Authority will afford prospective bidders an opportunity to inspect the site of the work.

The Authority reserves the right to waive any informalities in the bids received; to reject any or all bids, and to award the contract only to those experienced in this class of work and to the bidder whose proposal is deemed by the Authority to be most advantageous to the public interest.

DELAWARE RIVER PORT AUTHORITY
Joseph K. Costello
Executive Director

Bids: January 26, 1954

New York International Airport Water Meters

THE PORT OF NEW YORK AUTHORITY
CONTRACT NYA-140.021

Sealed proposals for furnishing and installing seven water meters in various locations at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1111, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, January 26, 1954, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1111, and copies will be furnished upon deposit of $10.00 per set. The deposit shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to the Engineer of Materials who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition not later than forty days after the opening of proposals. The deposit will be forfeited if the documents are not so returned within the forty days.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

Bids: January 21, 1954

Rehabilitation of Bronze Niche Doors and Frames Holland Tunnel

THE PORT OF NEW YORK AUTHORITY
CONTRACT O & M 217
PROPOSAL NO. 341

Sealed proposals for furnishing all labor, material and equipment necessary for rehabilitation of bronze niche doors and frames, South Tube, south wall in the Holland Tunnel, will be received at the office of the Department of Purchase and Administrative Services, The Port of New York Authority, Room 900, 111 8th Ave., New York, until 11:00 A.M. (E.S.T.) Thursday, January 21, 1954, at which time and place said proposals will be publicly opened and read.

Contract documents may be seen at the office of the Department of Purchase and Administrative Services, and copies will be furnished upon deposit of $10.00 per set. Deposit must be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. The deposit will be refunded if the documents are returned in good condition, not later than thirty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

OFFICIAL PROPOSALS

Bids: February 17, 1954

Additions to Sewage Treatment Plant

NOTICE TO BIDDERS
FOR THE
TOWNSHIPS OF
HAVERFORD, RADNOR, AND MARPLE
DELAWARE COUNTY, PENNSYLVANIA

Sealed bids in opaque envelopes for the construction of additions to the Sewage Treatment Plant will be received by the Boards of Commissioners of Haverford and Radnor Townships and the Board of Supervisors of Marple Township at a joint meeting in the Commissioners Meeting Room in the Haverford Administration Building, 2325 Darby Road, Haverford (Havertown P. O.), Delaware County, Pennsylvania, until eight (8) o'clock P. M., Eastern Standard Time, Wednesday, February 17, 1954, and then at said place, publicly opened and read aloud.

The Information for Bidders, Form of Bid, Form of Contract, Plans, Specifications, and Form of Performance Bond may be examined at the office of either of the Townships, whose addresses are as follows: The Haverford Administration Building, 2325 Darby Road, Havertown P. O., Pennsylvania; The Radnor Township Building, 212 E. Lancaster Avenue, Wayne, Pennsylvania; and The Marple Township Building, Springfield and Sproul Roads, Broomall, Pennsylvania; or, at the Consulting Engineer's office. Copies thereof may be obtained at either place upon payment of Twenty-five ($25.00) Dollars for each set of construction plans and specifications. Any bidder, upon returning such set promptly and in good condition, will be refunded his payment and any non-bidder upon so returning such set within ten (10) days after the date for the receipt of bids, will be refunded only one-half of his deposit. Checks given as deposit on plans and specifications shall be made payable to Radnor Township.

In general, the work included under the Construction Contract consists of alterations and additions to the existing Sewage Treatment Plant to increase its rated capacity from 1.2 M.G.D. to 3.6 M.G.D. The Electrical Contract includes wiring and devices necessary for the new facilities. The principal items of new construction include a screen, flume meter, grit chamber, two primary settling tanks, two high-rate filters, two final settling tanks, a floating cover digestion tank, a gas holder, a glass covered sludge drying bed, two new sewage pumps, recirculation pumps and chamber, sludge pumps, and chamber, metering apparatus, piping, roadways, and miscellaneous other work, all as required to provide a complete plant ready for operation.

Each bidder must deposit with his bid, an amount of not less than Five (5%) percent of his total bid in the form of a certified check or bank check payable to Radnor Township, subject to the conditions provided in the Information for Bidders. In addition, a Consent of Surety, signed by an acceptable Corporate Surety Company, shall be executed in the form accompanying the bid.

The Townships reserve the right to reject any or all bids, waive any informalities or to accept that bid, acceptance of which will, in the judgment of the Boards of Commissioners and Supervisors, best secure the public interest and efficient work. The Townships further reserve the right to eliminate certain items of work if they deem it to their best interest to do so.

No bidder may withdraw his bid within Forty-five (45) days after the date of opening thereof.

H. A. FRITSCHMAN
Secretary, Haverford Township
R. W. BARRINGER
Secretary, Radnor Township
R. T. NICHOL
Manager, Marple Township
WILLIAM RAISCH
Consulting Engineer
53 Park Avenue
Garden City, L. I.
New York
Dated: January 7, 1954.

Bids: January 20, 1954

Route #21, Sections 4-E and 5-A

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Department for:

Route 21, Sections 4-E and 5-A, from Clay Street to Riverside Avenue, Paving, and Widening at Rutgers Street, City of Newark and Town of Belleville, Essex County. Federal Project No. U-126 (5). Length 1.637 miles. The principal items of construction are:

Estimated: Roadway Items
35,055 cu. yds. Roadway Excavation—Earth
15,831 sq. yds. Pavement Excavation
19,953 cu. yds. Subbase
34,029 sq. yds. 8" Macadam Base Course
34,577 sq. yds. Pavement, Type MA-BC-2 3" thick
24,500 sq. yds. Concrete Pavement Surface, Rein. 10" thick
2,724 lin. ft. Reinf. Concrete Culvert Pipe
44 Inlets and Catch Basins
29,966 lin. ft. White Concrete Curb, various sizes
7,024 cu. ft. Concrete Cribbing
17 Items—Demolition of Buildings Bridge Items
3,023 cu. yds. Concrete in Structures
62,180 lbs. Reinforcement Steel in Structures

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J., on Wednesday, January 20, 1954, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Project" authorized by the provisions of Title 27 of the revised statutes of New Jersey and supplements, and by P. L. 413, 82nd Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, 309 Washington Street, Newark, N. J. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all unskilled labor employed on this contract shall be $0.75 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.50 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed:
STATE HIGHWAY DEPARTMENT
A. Lee Grover, Chief Clerk

Bids: January 20, 1954

Route #49, Section 19

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Department for:

ROUTE #49, SECTION 19

Route 49, Section 19, Bridgeton Relocation, from South Pearl Street to Commerce Street, City of Bridgeton, Cumberland County, Federal Project No. U-36(2). Length 0.894 miles. The principal items of construction are:

Estimated: Roadway Items
52,933 cu. yds. Roadway Excavation—Earth
6,000 cu. yds. Burrow Excavation
9,910 cu. yds. Subbase
22,490 sq. yds. Macadam Base, 6" thick
22,145 sq. yds. Pavement Type MA-BC-2
3,042 lin. ft. Reinf. Concrete Culvert Pipe, various sizes
39 Inlets, Catch Basins and Manholes
5,334 lin. ft. White Concrete Vertical Curbs
2,610 lin. ft. White Concrete Sloping Curbs
12 Items for Demolition of Buildings Bridge Items
604 cu. yds. Concrete in Structures
107,900 lbs. Reinforcement Steel in Structures

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J., on Wednesday, January 20, 1954, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Project" authorized by the provisions of Title 27 of the revised statutes of New Jersey and supplements, and by P. L. 413, 82nd Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, 22 Washington Street, Bridgeton, N. J. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all unskilled labor employed on this contract shall be $0.75 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.50 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Ave., Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed:
STATE HIGHWAY DEPARTMENT
A. Lee Grover, Chief Clerk

Contractors Watch This Section—

for new projects. Publish your announcements through the proposal sections of *Engineering News-Record* and get their bids.

CLASSIFIED SEARCHLIGHT SECTION ADVERTISING

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

UNDISPLAYED RATE:
(Not available for equipment advertising)
$1.50 cents a line, minimum 3 lines. To figure advance payment count 5 average words as a line.
POSITION WANTED undisplayed advertising rate is one-half of above rate, payable in advance.
PROPOSALS, $1.50 a line an insertion.

INFORMATION:
BOX NUMBERS count as 1 line additional in undisplayed ads.
DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).
EQUIPMENT WANTED or FOR SALE Advertisements acceptable only in Displayed Style.

DISPLAYED—RATE PER INCH:
The advertising rate is $17.10 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.
AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches —to a page. E.N.R.

Send NEW ADVERTISEMENTS: To New York City Office, 330 W. 42nd St., N. Y. 36 for January 21st issue closing January 11th

STRUCTURAL STEEL
DETAILERS AND CHECKERS
Excellent Opportunity For Top Rate
Men With Bridge & Building Experience
SAMUEL LICHTENBERG
STRUCTURAL ENGINEER
113 West 42nd St. New York 36, N. Y.

PROJECT ENGINEER
Mechanical contractor on water and sewage plants has opening for man to co-ordinate projects in home office. Growing organization in rapidly expanding field. In answering, give complete details of experience, education and salary requirements.
P-1264, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

MANAGER OF FOREIGN Construction Department with young, aggressive and expanding Southern firm. This position requires a man qualified to completely organize, foreign department. Duties will include securing organizing and prosecuting building and heavy construction work. Send complete resume of experience, education, references and availability to Box P-1135, Engineering News-Record.

BUILDING ESTIMATOR and Quantity Take-Off Man. Graduate Engineer preferred. Thoroughly experienced, permanent position with well established contractor with top-notch organization bidding competitively public works and commercial buildings throughout the South. Stanley W. Newman Company, Inc., P.O. Box 1646, Mobile, Alabama.

PAVING FIELD engineer wanted for promotion and service work in New England. Applicant should be graduate civil engineer with a minimum of ten years experience in concrete pavement construction. Write fully, giving past experience, references and salary desired: Box P-1212, Engineering News-Record.

WANTED RECENT civil or mechanical engineering graduate. General field of municipal water supply. Permanent position with annual increase in salary and bonus. Profit sharing Plan. Frequent change in location necessary. P-1152, Engineering News-Record.

WANTED—SEMI-retired engineer for quantity takeoff—some design. Near beautiful resort area. North Atlantic States. Seasonal. Write fully. P-1258, Engineering News-Record.

HYDRAULIC ENGINEER to work in development of county wide flood control plan. Salary $489-$608 per month. College degree in C.E. and three years of responsibile experience. Registration or eligibility for registraton as professional engineer in California. Location Southern California. Apply Orange County Personnel Office, 644 North Broadway, Santa Ana, California.

WANTED — CONSTRUCTION Superintendent, State age, experience, past 10 years. Salary and bonus basis after job. P-1259, Engineering News-Record.

ELECTRICAL CONSTRUCTION Superintendent wanted by Electrical Contractor (Est in 1914) performing general, commercial, and industrial work in large volume in Midwest. Must have at least 10 years of experience handling large installations. Our employees are aware of this opening. State education, experience, age, availability and references in your reply. P-1237, Engineering News-Record.

SENIOR FIELD ENGINEER
Mechanical
Graduate Mechanical Engineer with responsible field experience on steam power plants or related heavy industrial projects. Require experience in directing the mechanical phase of a major construction project.
Please write giving complete qualifications, references, and salary requirements. Your reply will be confidential.
BECHTEL CORPORATION
220 Bush Street San Francisco, Calif.

POSITIONS VACANT

WANTED — ESTIMATOR — Sewer and water work — location — Florida — Write c/o P.O. Box 329, Hyattaville, Maryland.

HALF TIME graduate and research assistants in eastern college. Obtain MS in CE in 2 years. Research or teaching in structural steel, prestressed concrete, hydraulics, soil mechanics, materials testing, engineering drawing. $1200 for school year plus tuition. P-1248, Engineering News-Record.

APPLICATIONS ARE invited for the position of Assistant Professor, Department of Civil Engineering, University of British Columbia, Vancouver, Canada. Candidates should have had post-graduate training preferably at the Ph.D. level in fluid mechanics. Duties include teaching fluid mechanics and other courses in the under-graduate school and teaching one post-graduate course in some phase of fluid mechanics. Starting salary from $4,500 to $5,000 depending on experience, with the possibility of augmenting income with summer work on hydraulic projects. Date of appointment is July 1, 1954. P-1257, Engineering News-Record.

SELLING OPPORTUNITIES OFFERED

PROGRESSIVE EXPANDING Organization servicing construction trades desires sales representatives in the following areas in New York State: Albany, Poughkeepsie, Rochester, Batavia, Jamestown. For interviews in your area write R. J. Thomson & Co., Inc., 2304 Brewerton Road, Syracuse, New York.

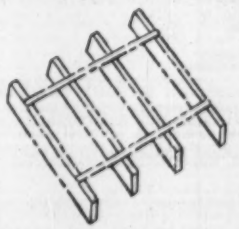
SALES ENGINEERS — Pittsburgh, Pennsylvania with established national concern selling prefabricated metal products to engineering and construction markets. Position offered is permanent and presents excellent future with aggressive, progressive and expanding organization. Engineering degree desirable. Previous sales experience unnecessary. Age 24 to 30. Car furnished. Complete training program. Salary and bonus. SW-8254, Engineering News-Record.

ESTABLISHED MANUFACTURERS' Sales Representatives wanted by reputable manufacturer whose patented product is used in construction of sewage disposal plants, waterworks, pumping stations, industrial plants, etc. Territory open—Chicago, Ill., Cincinnati, Ohio, and St. Louis, Mo. areas. RW-9950, Engineering News-Record.

SALESMEN, EXPERIENCED. For pump and wellpoint business. Established performance record. To go anywhere. Replies confidential. SW-1260, Engineering News-Record.

(Continued on page 98)

NATIONAL DISTRIBUTOR WANTED
Entire country open for distributor to stock and sell new line of open steel grating manufactured by well established firm.



Grating to be furnished distributor in stock panels. Distributor must stock, advertise, sell and do necessary fabricating. Only those sufficiently well capitalized to handle large volume on a national basis should apply.
RW1213 Engineering News Record
330 W. 42 St. New York 36, N. Y.

NEW YORK DISTRICT REPRESENTATIVE
Waste and Water Treatment Equipment and Pumps
Nationally known, leading manufacturer of complete line of sewage and industrial waste treatment equipment—water treatment equipment—centrifugal, deep well turbine, and axial flow pumps—for industrial and municipal users, will appoint qualified sales engineer to head up our New York District office. Experience in this field is required. Submit full details in reply.
SW-1250, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

JR. CIVIL ENGINEERS FOR CALIFORNIA
Permanent positions in California's huge highway program. Wide choice of locations. High-grade professional experience. Open to CE graduates or to non-graduates with 2 years' experience. $376 to start, raise in six months. Positions open at this level only.
STATE PERSONNEL BOARD
1015 L Street Sacramento 14, Calif.

SALARIED POSITIONS $3,500—$35,000
We offer the original personal employment service (established 43 years.) Procedure of highest ethical standards is individualized to your personal requirements. Identity covered; present position protected. Ask for particulars.
R. W. BIXBY, Inc., 272 Dun Bldg., Buffalo 2, N. Y.

STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty-third year. Write today.
WILSON Engineering Corp.
College House Offices—HARVARD SQUARE, CAMBRIDGE, MASS.

(Continued from page 97)

EMPLOYMENT SERVICES

SALARIED PERSONNEL, $3,000-$25,000. This confidential service, established 1929, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L, 241 Orange St., New Haven, Conn.

OVERSEAS CONSTRUCTORS—Comprehensive Digest Guide to most active constructors—engineers hiring Americans for overseas projects—$1.00 Cove-McKane International, P.O. Box 126, N. Y. 4, N. Y.

POSITIONS WANTED

CHIEF ESTIMATOR—Will be open for a position in six weeks. Thoroughly familiar with all phases of take-offs. Pricing, sub bids for commercial and industrial buildings. PW-1096, Engineering News-Record.

BRIDGE ENGINEER, wants highway bridge design and drafting on subcontract basis. Will take preliminaries and furnish contract drawings, or design only, on lump sum or percentage basis. Thoroughly experienced, registered Eastern States. Box PW-1035, Engineering News-Record.

CONSTRUCTION EXECUTIVE Available first of year. Thoroughly experienced project manager, estimator. Buy Sub-Contracts, materials, etc., manage field to produce good costs. Any phase Industrial, Commercial construction. PW-1163, Engineering News-Record.

SANITARY ENGINEER. M.C.E., Cornell Univ. 12 years experience in experimental, research & development; design, construction, and operation of water, sewage, and industrial waste treatment facilities; conducting sanitary surveys; writing reports, contracts and specifications. PW-1150, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT: concrete pipe manufacture, considerable experience. PW-1100, Engineering News-Record.

NON-GRADUATE Construction engineer desires foreign employment where family is permitted. Europe preferred, South America acceptable. 3 yr. college equivalent, 14 yr. experience. Now employed as owner's representative on 8 million project at $8000. Resumes to all replies. PW-1151, Engineering News-Record.

ENGINEER, REG. P.E. Reports, investigations. Settlement of contractors' claims. 45 years experience: design, construction. Turnpikes, tunnels, buildings, foundations, schools, etc. PW-1182, Engineering News-Record.

POSITION WANTED: 30 years experience, with heavy earth moving equipment, as general foreman, super. of equipment, shovel operator, mechanic, will go anywhere, no alcohol. PW-1203, Engineering News-Record.

MATERIALS ENGINEER with 20+ years in steel, concrete, asphalt, soils, welding. Competent administrator. Seeks broader responsibilities in industry or consulting. Reply PW-1231, Engineering News-Record.

MECHANICAL ENGINEER desires foreign employment in Europe or Latin America. Age 35, married, one child. Previous Latin American experience. Spanish speaking. Over 15 years heavy experience in power, mining, construction, inspection. Presently employed by large Southwestern construction firm but available on short notice. Excellent references. Inquiries invited. PW-9747, Engineering News-Record.

OFFICE-FIELD Engineer. Project Engineer for General Contractor. Experienced in layout, computations, design and general engineering supervision of earthwork and drainage projects. Have Civil Service Rating. 37 years old. Available now. Keith Jared, Phone 211-J, Bedford, Iowa.

STRUCTURAL ENGINEER — Senior C.E. licensed in several States with excellent experience in bridges, buildings and industrial plants; steel, concrete and wood, wishes to enter into partnership with young engineer with means, or elder engineer about to retire. PW-1227, Engineering News-Record.

CIVIL ENGINEER—MSCE. 6 years experience in hydraulics, irrigation, specs and estimating. Consider either foreign or domestic position. PW-1244, Engineering News-Record.

Engineers—Foremen—Office Men
Learn latest methods to organize and run work. Prepare for the top jobs.
Send post card for details.
GEO. E. DEATHERAGE & SON
CONSTRUCTION CONSULTANTS
411 So. 5th Ave. Lake Worth, Florida

POSITIONS WANTED

PROJECT MANAGER, Construction Supt.—28 years, experience Industrial buildings & Machinery and heavy foundations. Good manager, available immediately. Desire Southeastern States. PW-1236, Engineering News-Record.

CIVIL ENGINEER, age 27, 5 years field experience, desires position with contractor or engineering firm located in Northwest or Florida. PW-1235, Engineering News-Record.

CONSTRUCTION ENGINEER 31, BSCE, 7 years on hydro-electric, chemical plant, warehouses, survey, quantity estimates, design, office engineering, 3 yrs. field supervision, desires relocation with building contractor. Prefer South Atlantic states. PW-1222, Engineering News-Record.

DRAFTSMAN—BROAD experience. Box PW-1247, Engineering News-Record.

ENGINEER B.C.E., M.S.C.E. 10 years field, office. Responsible Construction position New York or Long Island. PW-1254, Engineering News-Record.

CIVIL ENGINEER, graduate. Eleven years experience in construction supervision, cost estimating, planning, reconnaissance and location surveys, design, and coordination of roads, railroads, industrial buildings, power distribution stations, airfields, and small communities in the U.S.A., Europe, and Japan. PW-1253, Engineering News-Record.

ESTIMATOR (CHIEF) Heavy Construction. P.E. excavation, Foundations, concrete, all types heavy construction. Bidding, cost control sub-contract negotiation, administration. Long experience in Metropolitan New York City area. Seeking change for association with New York City contractor or consultant. PW-1262, Engineering News-Record.

SUPERINTENDENT CONSTRUCTION. 20 years experience heavy construction. Prefer small contractor. Background civil engineering and Field Supervision. PW-1261, Engineering News-Record.

RESPONSIBILE MANAGEMENT position with manufacturing concern wanted by graduate ME, 31, married. 10 years experience design engineering and district sales management construction machinery, material handling systems and equipment, clamshell buckets, fabricated plate products, concrete batch plants, steel forms. PW-1266, Engineering News-Record.

SELLING OPPORTUNITY WANTED

MANUFACTURERS AGENT seeks new lines. Straight Commission or jobbing basis. Excellent connections Architects, contractors — New York State. P.O. Box #946, Albany, N. Y.

SETTLED
Commercial and Industrial Concrete Floors and Airport Runways Raised and Stabilized by Hydraulic Pressure.
15 yrs. experience
LEE AND COMPANY
4545 De Tonty St. Louis 10, Mo.
Lee Garell, Mgr. Mohawk 4414

4500 Manitowoc Shovel-Dragline Combination
Diesel Power, 1952 Model
Good Condition—Reasonably Priced
Western Location.
FS 1220 Engineering News-Record
68 Post St., San Francisco 4, Calif.

GLAZER STEEL Corp.
Structural and Plate Steel Fabricators
Open capacity for quick delivery now available. We solicit your inquiries for Steel Fabrication and Warehouse Steel Products. Let us figure your jobs . . . Large or Small.
P. O. BOX 1390 KNOXVILLE, TENN.
Phone 4-9801

WANTED

WANTED
USED, GOOD CONDITION
2-Traveling Bridge Cranes
Box girder type—electric powered 440 volt, 3 phase, 60 cycle. For inside service structural fabricating plant. Span 80'; main hoist 25 ton; auxiliary hoist (1) 5 ton; minimum lift 40'; travel speeds (approximate) bridge 400 FPM; trolley 150 FPM; lift speed (approximate) main hoist 35 FPM auxiliary 70 FPM. Submit full particulars.
W-1175, Engineering News-Record
330 W. 42 St. New York 36, N. Y.

WANTED TO BUY
4 Used Euclids
End Dumps—Late Models
WILLIAMS CONSTRUCTION CO.
Box 145 Baltimore 20, Md.

Your inquiry will have special value . . .
if you mention this magazine, when writing advertisers. Naturally, the publisher will appreciate it . . . but, more important, it will identify you as one of the men the advertiser wants to reach with this message . . . and help to make possible enlarged future service to you as a reader.

SPECIAL SALE!

ECA CONSTRUCTION EQUIPMENT

Check these items NOW at your nearest Plant

CHICAGO • PHILADELPHIA • PITTSBURGH

AIR COMPRESSORS,

Portable, 2-Stage

500 cu. ft. Ing. Rand. Mdl. K-500, 100#, Waukesha-Hesselman Diesel engine, 4 pneu. tires, hydraulic clutch.

315 cu. ft. Ing. Rand. 4 cyl. Wauk. gas eng., 4 steel wheels. $1,500.

210 cu. ft. Sullivan. 4 cyl. Buda gas engr., steel wheels. $1,500.

160 cu. ft. Gardner Denver. 60 HP Buda gas eng., 4 steel wheels. $1,500.

WE HAVE A LARGE STOCK OF AIR COMPRESSORS, ELECTRIC, GAS AND DIESEL DRIVEN. FROM 105 TO 500 CU. FT.

BOILERS, HORIZ. & VERTICAL

115 HP Marion Loco. type, 151#, 60" dia., 20' long. Excel. shape.

125 HP Erie City Economic, 100#, loco. type, Nat'l. Board, self-contained, excel. condition.

75 HP Indus. Brownhoist 150# vertical type, Nat'l. Board.

40 HP Nagle, 125# pressure, 48x108", ASME 1292, w/fittings. Vertical type.

BUCKETS, CONCRETE

5 yd. Laydown type, Gar-Bro., double clam, gate opening size 20x28". Like new.

3 yd. Blaw Knox SX90 roller gate, wt. 2200#. Volume 90 cu. ft.

1 yd. Blaw Knox size R31 and S-31, roller gate round type.

1 yd. Insley Item 672, round type, cap. 35.5 cu. ft. Wt. 820#.

½ yd. Insley Item 670, round type, cap. 15 cu. ft. Wt. 420#.

WE HAVE AN EXCELLENT SELECTION OF CLAMSHELL, DRAGLINE AND CONCRETE BUCKETS.

This Month's SPECIALS

CRANES, CRAWLER

1½ yd. Mdl. K-360 Link Belt Crane, Ser. 1959, Cat. D-13000 Diesel eng., 80' boom, hydraulic controls. Good condition. Only $15,000.

1½ yd. P&H Mdl. 655-A Diesel Crane or Dragline, Ser. 6426, 80' boom, 20' jib, Cat. D-1300 engine, high gantry.

1½ yd. Lorain Mdl. 77 Diesel Crane, Ser 9163, D-13000 Cat. engine, 45' to 85' boom, 20' jib.

Mdl. 501 Koehring Crawler Crane #1071, 60-70-80' boom, 18' jib, Mdl. K Wisc. gas eng., cap. 40,000# @ 12'.

No. 3 Northwest Crawler Crane, Ser. 4603, ¾ yd., 40' boom, good condition.

¾ yd. LS-85 Link Belt Crane, year 1946, Cat. D-4600 Diesel eng., 40' boom, good operating condition.

⅜ yd. Mdl. 255A P&H Crane, Ser. 5750, power 6 cyl. Waukesha gas eng., 35' boom.

CRANES, LOCOMOTIVE

25 ton American Locomotive Crane, Mdl. 825, 50' boom, Cummins Diesel eng. A real buy.

30 ton Mdl. F OHIO #3266, 50' boom, oil fired, National Board 200-lb. boiler.

DERRICKS, GUY & STIFFLEG

20-Ton Terry Steel Erectors Guy Derrick, 115' mast, 105' boom, thoroughly rebuilt, perfect condition.

30-Ton Wiley Mdl. F Steel Stiffleg, 60, 80 or 100' boom; rated with 60' boom 30 ton @ 38', 15 ton @ 57'.

GENERATORS, ENGINE

75 KW Diesel AC Generator, 220/440/60/3, Cat. D-13000 Diesel eng., complete with all controls and starting eng. Generator completely rewound and excellent shape.

10 KW Ready Power Plant, 230 volts DC, 43.5 amps., Inter. Harvester 4 cyl. water cooled gas eng.

10 KW Continental Light Plant, Ser. 102, 120 volts 3 phase or single phase, power 4 cyl. Continental gas eng.

HOISTS, ELECTRIC

50 HP American, 3/drum, 3/60/220, 7500# @ 200 FPM. Wt. 10,000#.

50 HP Mundy 2/drum, #15691, National 2-spool attached swinger, 3/60/440 slipring, 7,000# @ 195 FPM.

50 HP Thomas Class A 2/drum, 3/60/220 slipring, 6,000# @ 250 FPM.

WE HAVE A LARGE STOCK OF GASOLINE, ELECTRIC, DIESEL AND STEAM DRIVEN HOISTS, ALL SIZES AND TYPES.

MIXER, STATIONARY, CONCRETE

28-S Jaeger Stationary Mixer, 25 HP electric, 220/440/60/3, 100 gal. water tank. Rebuilt, excel. condition.

PUMPS, CENTRIFUGAL

12" Dayton Dowd, vertical, 50 HP, 3/60/220/440, 6,000 GPM @ 19', 4250 GPM @ 32'. Wt. 4110#.

6" Carter, self-priming, Hercules gas eng. 1,500 GPM.

All types of pumps, gas and electric, from 1½" to 12".

8-TON TANDEM ROAD ROLLER

8 ton Tandem Buffalo-Springfield Roller, 4 cyl. Waukesha gas eng., completely rebuilt. Priced very low.

TRACTORS, CRAWLER MTD.

International TD14 Crawler Tractor, sideboom attachment #233, Ser. TDF 15152.

Caterpillar D4 Crawler Tractor, Ser. 5T6035W, with LeTourneau power winch for scraper. Bargain.

All this equipment is owned by us and may be inspected at one of our show rooms.

PARTIAL LIST ONLY • SEND FOR OUR STOCK LIST — *WE BUY • REBUILD • SELL AND RENT*

CLIFTON HEIGHTS, PA.
Box J-608, Sub. of Phila
MAdison 6-2200

PITTSBURGH 30, PA.
Box J-933
FEderal 1-2000

ECA
EQUIPMENT CORPORATION OF AMERICA

CHICAGO 12, ILL.
1155 S. Washtenaw Ave.
NEvada 8-2400

NEW YORK 7, N. Y.
30-J Church St.
WOrth 2-0036

FOR SALE

New and Used material—Immediate delivery from stock Angles, Channels, I and WF Beams, especially for Contractors needs

H BEAMS PILE SECTIONS

60 pcs 12" B P S 53# 60'
16 " 12" B P S 74# 75'
16 " 10" B P S 57# 67' 6"
34 " 10" B P S 42# 48'
23 " 10" B P S 42# 60'

Phone or Wire your steel requirements

We are also interested in purchasing your surplus material.
We assure you our prices will be the best obtainable.

HY DRACHMAN STEEL CORP.

Warehouse
14-23 34th Avenue, Astoria, New York
AStoria 8-4484 8-8023

Sales Office
563 East Tremont Ave., New York City, N. Y.
CYpress 9-5440

SURPLUS EQUIPMENT
FOR SALE OR RENT
With Option to Purchase
Rebuilt—A1 Condition

1 48B Bucyrus Erie Shovel 2 cy diesel
1 Model 6 N.W. Shovel 1½ cy diesel
1 Caterpillar D8 Bulldozer
1 New Shovel Front for Model 6 N.W.
1 Used Shovel Front for Model 25 N.W.

WILLIAMS CONSTRUCTION COMPANY
Box 145 Balto, 20, Md. Phone—Murdock 6-6600

PIPE
SURPLUS NEW and USED FOR SALE

FOR SALE
MANITOWOC DRAGLINES Model 4500

FOR SALE or RENT

Manitowoc Model 3500 Liftcrane. Clamshell, Dragline combinations. 2½ cu. yds., 60 ton capacity.

Reply to

Clemens Construction Co.
P. O. Box No. 266, West New York, N. J.

CLASS A-50

ASBESTOS CEMENT PIPE

18 in. . $1.50 ft.
(462 feet available)

20 in. . $2.00 ft.
(2684 feet available)

16.4 foot lengths with Simplex Couplings

F.O.B. New Orleans

SUITABLE FOR WATER, OIL GAS OR SEWAGE

Can be seen in warehouse in New Orleans

WRITE, WIRE OR PHONE

THE CLARK-AIKEN CO.
LEE, MASSACHUSETTS

PIPE

15,000 feet 6" steel pipe
10,000 feet 4" steel pipe

Both equipped with roller grip couplings suitable for air or water.

Subject to prior sale

FRAZIER-DAVIS CONSTRUCTION CO.
1319 Macklind Avenue, St. Louis, Mo.
STerling 1950

Box 188 Grahamsville, New York
Grahamsville 2861

PUMPCRETES
Rebuilt Current Models
For Sale or Rent
CONCRETE EQUIPMENT COMPANY
Jones Island, Station D
Milwaukee 7, Wis.

EST. 1904

DAVIDSON
PIPE COMPANY INC.

ONE OF THE LARGEST STOCKS IN THE EAST

Seamless and Welded ⅛" to 26" O.D.
All wall thickness Manufactured.
Specialty large sizes.
Cutting — Threading — Flanging — Fittings — Valves.

Call GEdney 9-6300
50th St. & 2nd Ave., B'klyn 32, N. Y.

SERIES 71 GM DIESEL ENGINES
20 Used Models 4-71, 4035, 4005A, 4081A
For Sale - FOB Duncan, Oklahoma

HALLIBURTON OIL WELL CEMENTING COMPANY
Contact JAMES A. FITZGERALD
Drawer 1431—Duncan, Oklahoma

RAILS-TIES
TRACK ACCESSORIES
NEW and RELAYING

Pipe Sizes ⅛" to 72" OD

PIPE, VALVES & FITTINGS

pipe piling • culverts • valves
specialists in prefabricating pipe

ALBERT PIPE SUPPLY CO., INC.,

CUTTING-THREADING-FLANGING-WELDING
BEVELING-BENDING-COILING-LINING
TO ALL STANDARD SPECIFICATIONS

"one call gets them all"

fittings • FLANGES • WELDING • IRON-STEEL

SPEEDLAY pipe systems
Berry at North 13 Sts., B'klyn, N. Y.

NEW—RAILS—Relayers
All sizes and weights. Also frogs, switches, spikes, bolts, tie plates, contractors' and mine equipment carried in stock.

M. K. FRANK
480 Lexington Ave. Park Bldg.
New York, N. Y. Pittsburgh, Pa.
Reno, Nevada Carnegie, Pa.

FOR SALE—*Immediate Delivery*

C.I. Water Pipe and Fittings—AWWA Standard

We specialize in pipe and fittings which are hard to get, having in stock such as the following:—

2000 linear feet 30" Class B—Pit Cast—Class B in 12 ft. lengths—Re-conditioned

5 Lengths 60" B&B Pipe, Cl. D. 12' long
3—60" x 24" Solid Sleeves, Cl. D.
1—60" B&B 45 deg. Bend, Cl. D.
20" to 36" B&B 45 deg. Bends
3" to 30" Y-Branches—Type 2

Also C. I. B&S Pipe from 2" to 36". C. I. Flanged Pipe from 3" to 24". Always on hand a complete line of C. I. Fittings—all sizes and kinds.

TAGCO, INC.
111 Front St. Hempstead, L. I., N. Y.
Tel.—Hempstead 2-5535 or 2-8857

GLOBE PIPE & FITTING CO.
VALVES FITTINGS NEW **PIPE** USED FOR ALL PURPOSES
785 Metropolitan Ave., Brooklyn 11, N. Y.
EVergreen 7-6220

RAILROAD Cross and Switch TIES
Promptly from adequate stocks
NEW and USED *(as available)*
GILLIS & COMPANY
29 East Madison St. Chicago 2

When you need

PIPE . . . fast

use this section, as many contractors do, as a pipe buying directory. It can save you time when you want to know, quickly, where to buy good new or used pipe.

RAILS
NEW — RELAYING — RAIL ACCESSORIES
MIDWEST STEEL CORP.
502 DAVIDSON STREET
CHARLESTON, W. VA.
IMMEDIATE DELIVERY

FOR QUICK, DEPENDABLE

COMPRESSOR

SERVICE

AMERICAN AIR of JERSEY

GAS • DIESEL • STEAM • ELECTRIC

SELL—BUY—TRADE—RENT—REPAIR

A RENTAL COMPRESSOR FOR EVERY JOB

55 CFM Lindsay (GAS) Portable
60 CFM Worthington (GAS) Portable
70 CFM Smith (GAS) Portable
89 CFM 6 x 7 Worthington HB, 15 HP Elec
105 CFM Worth-IR-CPT Portable
107 CFM 7-7 x 7 Ingersoll FS-1 STEAM
129 CFM 7½ x 7 American AF-1, 20 HP
142 CFM Ingersoll Semi-Portable 25 HP
160 CFM IR-Worth Portable
165 CFM Smith 110SR Semi-Portable, 25 HP
195 CFM 8-9 x 9 Worthington HS STEAM
210 CFM Worthington (GAS or DIESEL) Port
211 CFM 9 x 9 Worthington HB, 40 HP Elec
279 CFM 11-10 x 11 Worthington HS STEAM
294 CFM 10 x 12 Worthington HB, 50 HP
315 CFM Worthington (GAS or DIESEL) Port
387 CFM Gardner Semi-Portable 75 HP
445 CFM Gardner Semi-Portable 100 HP
462 CFM 12-14½ x 13 American AF-S STEAM
500 CFM Worthington (DIESEL) Portable
538 CFM Worthington Semi-Portable, 100 HP
600 CFM Worthington (DIESEL) Portable
628 CFM 14 x 13 Ingersoll ES-1, 100 HP

MANY OTHERS TO CHOOSE FROM

GUARANTEED PERFORMANCE

COMPRESSORS SINCE 1902

American
AIR COMPRESSOR CORP.
DELL AVE. & 48th ST. NORTH BERGEN, N. J.
Telephone UNion 5-4848

LOW COST INSTALLATION AND OPERATION

CABLEWAYS
IMMEDIATE SHIPMENT
ELECTRIC, STEAM OR DIESEL
CAPACITY 3 TO 20 TONS
SELL, RENT OR BUY

FOR DAMS BRIDGES BREAKWATERS FILTRATION AND SEWERAGE PLANTS

FOR SPEED ECONOMY EFFICIENCY FLOOD SAFETY LABOR REDUCTION

AMBURSEN DAM CO. INC.
295 MADISON AVE NEW YORK

SHOVELS—CRANES—DRAGLINES
Northwest 80D Shovel-Dragline. New 1948.
Northwest 95 Crane-Drag., Bm. 95'. New 1948.
Northwest 80-D Shovel-Crane. Diesel.
Buc-Erie 51-B Shovel. Practically new cond.
P&H 955-ALC. Diesel Crane, 130' boom, 1951.
Lima Model 1201 Diesel Shovel 3½ yds.
Buc. Erie 54-B Shovel-Dragline. Excellent.
Buc- Erie 120-B Electric Shovel. 5 yds.
Lorain L820 Shovel-Crane-Drag. 2 yds.
Manitowoc Mod 3500 Diesel Shovel.
Manitowoc 4500 Shovel-Dragline. New 1951.
Lorain Mod. Mc-414 Moto-Crane 70 ft. Boom.

WHIRLEY-GANTRY-PORTAL CRANES
American Mod. 10125, 50 tons, 40' radius 125' boom.
Washington Mod. 28-105, 42 tons, 30' radius, 135' boom.

DITCHERS
Buckeye Model 160. Excellent.
Parsons Model 310.
Cleveland Model 320. Diesel powered.

CONCRETE PLANTS—BINS & SILOS
Heltzel 4 Comp., 3 agg., 150 yds., 200 bbls. cement.
Noble CA-244. Large capacity plant. Complete.
Heltzel 1000 bbl. 2 compt. cement silo. Complete.
Large plant 2½ yds. 6 compt. aggregate and cement.
Large plant 400 yds., 5 compt. with 2 yd. Mixers.
Cement bin 400 bbls. with batcher. NEW.
Agg. bin. 100 tons 3 cpts. 2 yd. weighbatcher. NEW.

ASPHALT PLANTS
Barber-Greene 848 complete plant.
Madsen 4000# complete. Excellent.
Pioneer Model 101, complete, new 1948. Excellent.
Monotrol-Overmander, 25 tons per hr. capacity.
Simplicity Model S-100. Diesel powered.
Hetherington-Berner Asphalt Moto-Paver.

STIFF LEG AND GUY DERRICKS
American 40 ton stiff leg 140' boom, 100 HP, elec. hoist.
Stiff leg 75 tons with 3 drum elec. hoist.
Steel Stiff leg Derrick 50 Ton, 100' Boom.
Steel stiff leg derrick, 30 tons, 100 ft. boom.
Guy-Erectors 110' Mast 100' BM., 35 Tons.

CONCRETE MIXERS AND PAVERS
Barber-Greene Model 879A asphalt paver-finisher.
2 Smith 56-S tilting 2 yd. elec.
Jaeger BP-5 Asphalt Paver & attachments.
2 Ransome 34-E Dual Drum Pavers Diesel.
Koehring 34 E Dual Drum Paver. Diesel.

RICHARD P. WALSH CO.
30 Church St. New York 7, N. Y.
Cable RICHWALSH Cortlandt 7-0723-4

CONCRETE PLANT EQUIPMENT

2—1,200 barrel Johnson Cement Silos with bucket elevator, under track hopper and screw conveyor.

2—Johnson 150 cubic yard Concrete Plants, 3 aggregate and 1 cement compartment, 2 cubic yard aggregate and cement weight batchers, 520 barrel auxiliary cement bin with truck hopper, elevator and screw conveyor. One outfit has aggregate truck hopper and bucket elevator. Plants include 2 each of Ransome 28S Mixers.

50—1½ yard Blaw-Knox, R-46, Bottom Dump Concrete Buckets.

Subject to prior sale

FRAZIER-DAVIS CONSTRUCTION COMPANY
1319 Macklind Avenue, St. Louis, Mo. STerling 1950
Box 188—Grahamsville, New York Grahamsville 2861

FOR RENT

TRUCK CRANES
Twenty—10-ton to 20-ton Capacity
Sectional Boom Lengths to 130 Feet

LIMA—P&H—MANITOWOC
30-ton to 50-ton Capacity
Sectional Boom Lengths to 175 Feet

ROGERS LOW-BED TRAILERS
Up to 150-Ton Capacity

ROGER SHERMAN TRANSFER CO., INC.
EAST HARTFORD, CONN.

Branches: SPRINGFIELD, MASS. NEW HAVEN, CONN. ALBANY, N. Y.

FOR SALE

Located in our Yard, Cleveland, Ohio, in excellent condition subject to prior sale:

6—25 YD. R. U. LeTOURNEAU SCRAPERS, overhauled, tires good, Serials 59062, 59519, 59643, 59656, 58991, 58992, $4500.00 each.

1—MODEL 9 BV EUCLID LOADER, Serial 9 BV-121, powered with GMC Diesel 671 RA 63-6A-9046, completely overhauled and good as new. Has new belt never used. Price $18,000.00.

1—6 TON BROOKVILLE DIESEL LOCOMOTIVE 36" gauge, International UD9 Engine 5 speed transmission, 20" rolled steel wheels, mechanical brakes, gas starting engine, electric lights, enclosed cab, used 3 months, price $1500.00.

Call Mr. Fuller Grund, Broadway 1-7860

THE HUNKIN-CONKEY CONSTRUCTION COMPANY
3459 E. 52nd Place Cleveland, Ohio

DEPENDABLE USED MACHINES

Special:—Cedar Rapids 40x20 roller bearing roll crusher, attractive price. Come see it!

Bay City 1¼ yd. shovel	Pioneer 4x8 and 4x10, 2-deck screens	Simplicity 2x6 screen
Lorain ⅜ yd. shovel	Hoppe backhoe on Chev. truck	Eagle coal crusher
Bay City ⅝ yd. dragline	Diamond 9x18 roller bearing crusher	40' bucket elevator
P&H ½ yd. crane	Cedar Rapids 16x16 roll crusher	Gallon motor grader
Butler fork truck	45 ton, 3-comp., port. steel bin	LeRoi VP1 motor

FOR RENT,—cranes, draglines, backhoes, buckets, and all other accessories

10002 Southwest Highway TRACTOR & EQUIPMENT CO. Oak Lawn, Ill.

FOR SALE

SIX—500 CU. FT. INGERSOL-RAND DIESEL DRIVEN AIR COMPRESSORS

Mounted on Pneumatic Tires—Good Condition

CONTRACTORS TRADING & EQUIPMENT CORP.
232 FULTON ST - N.Y. 7, N.Y. BArclay 7-3940

TRENCHERS

BUCKEYE MODEL C10-C15-160-410-406-11-12-51-32
CLEVELAND 95-110-140-320
PARSONS MODEL 25-310-250-221
BARBER GREEN MODEL 44C, 5'6", 7'6", 8'6"
P & H MODEL 1030-1545

AIR COMPRESSOR RENTAL CO.
19615 Nottingham Road Cleveland, Ohio
Kenmore 1-8000

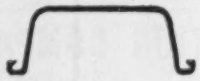
PILING

SURPLUS NEW and USED **For Sale or Rent**

STEEL SHEET PILING

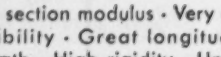
Available from stock. Will also roll to size and specifications.

LARSSEN Arch Web



High section modulus · Very great durability · Great longitudinal strength · High rigidity · Uniform interlock

UNION Straight Web



For cellular construction
High interlocking strength

Let us design your sheet piling structure ECONOMICALLY.

KURT ORBAN CO., INC.
205 East 42nd St., N. Y. 17, N. Y.
Phone: MU 4-7700

STEEL SHEET PILING

WANT BUY

ALL SECTIONS
STEEL SHEET PILING
PILE HAMMERS & EXTRACTORS

DARIEN CORP.
60 E. 42nd St. New York 17, New York

FOR SALE OR RENT

STEEL SHEET PILING

BRAND NEW

1336 pcs. 58 ft.-Carnegie MP-101
100 welded Y's 56 ft.

About mill price in carload lots.

IMMEDIATE SHIPMENT FROM CHICAGO

MISSISSIPPI VALLEY EQUIPMENT CO.
509 Locust St., Chestnut 4474, St. Louis, Mo.

FOR SALE

STEEL SHEET PILING

AT CHIEF JOSEPH, WASHINGTON
Shipped New—Used Only One Job

CARNEGIE Length	MP-101 Pcs.	MP-102 Pcs.	TEES Pcs.
72-65 ft.	105	100	2
65-60 ft.	210	50	9
60-50 ft.	210	5	18
50-45 ft.	290	2	7
45-40 ft.	120	1	13

Also quantity shorter than 40 ft.—Quick shipment regardless of job location, write, wire or phone.

MISSISSIPPI VALLEY EQUIPMENT CO.
509 Locust St., CHestnut 4474, St. Louis 1, Mo.

STEEL SHEET PILING

900 TONS ALGOMA B6—30 FT. CANADA
300 PCS. U.S. MP-101—Y-PCS. 56 FT. IN ILL.
498 PCS. U.S. MP-101—56 FT. IN ILL.
244 PCS. BETH. DP-2—25 FT. IN N. Y.
382 PCS. BETH. AP-3—20/25 FT. IN PA.
128 PCS. BETH. DP-2—60 FT. IN OHIO
188 PCS. BETH. DP-2—40 FT. IN N. J.
350 PCS. BETH. DP-2—50 FT. IN N. Y.
400 PCS. BETH. ZP-32—58 FT. IN FLA.

FOUNDATION EQUIPMENT

E-4 McK. TERRY EXTRACTOR
15 McK. T. HAMMERS 11B3—10B3—S8—S5 & No. 5
Vulcan No. 0-1 & 2 Pile Hammers
9½ x 10 LAMBERT 3 DRUM STEAM HOIST

R. C. STANHOPE, INC.
60 E. 42nd St. N. Y. 17, N. Y.

STEEL SHEET PILING

260-Pcs. 39-40 Ft. M-115 So. Dakota
350-Pcs. 35-39 Ft. M-112 Kansas City
100-Pcs. 30-35 Ft. I-27 Kansas City
107-Pcs. 24-65 Ft. M-112 North Dakota
200-Pcs. 27-30 Ft. M-116 Kansas
100-Pcs. 24-25 Ft. M-115 Kansas
100-Pcs. 17-20 Ft. M-112 Kansas City

Available for prompt shipment
Other lots at various locations

CONTRACTORS MACHINERY COMPANY
Phone Valentine 4740
2637 SW Blvd Kansas City 8, Mo.

We do a Nation-Wide business in

STEEL SHEET PILING

IMMEDIATE SHIPMENT

1900 pcs. 72-18 ft. Carn. MP-101-West Coast
184 pcs. 60-50 ft. M-116 & M-118-Illinois
95 pcs. 60-30 ft. Beth. DP-2-New York
139 pcs. 30 ft. Inland I-23-Kentucky
112 pcs. 40 ft. Larson 11-Alabama

Other lengths & sections used & new at other locations in United States for rent.
We have Nation-wide reputation for effecting QUICKEST SHIPMENTS.

All sizes Vulcan & McKiernan Pile Hammers & Extractors for rent—Shop Rebuilt
Regardless of location of job. Wire, Write, or Phone

MISSISSIPPI VALLEY EQUIPMENT CO.
509 Locust St., Chestnut 4474 St. Louis, Mo.

FOR SALE
DREDGE PUMPING UNIT

CONSISTING OF:

Model 38-D-8 ¼ Fairbanks-Morse, 720 RPM 10-cyl., 1600 HP OP Diesel Engine.
American Blower Corporation Hydraulic Coupling
Universal Gear Corp. 2.2/1 reduction gear.
Timken roller thrust pump bearing.
Bucyrus-Erie 18 x 20 Dredge Pump.
Cast steel flap valve and fittings.
Three Worthington Type 2-UB-1 Service Pumps.

This equipment was used as a land-based Booster Plant on a mine stripping project in Northern Minn. Guaranteed in good condition and priced to sell. Will crate for export.

Z. W. THOMAS
Box 395 Quincy, Illinois

FOR SALE
48B BUCYRUS ERIE SHOVEL 2½ YDS.

Completely Overhauled
$24,000.

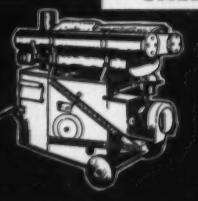
J. C. McDONALD
Box 143, Murdock 6-4600, Baltimore 20, Md.

SALE or RENT

3—Northwest ¾ yd. #25 Pull shovels or cranes (1952 Murphy G.M. Diesels)
1—Northwest 1¼ yd. 104—52" Pull shovel Gas
1—Lorain 40 2/4 yd. Pull shovel or crane Gas
1—H. M. Hough Payloader 1½ yd. 1952
1—D-6 Caterpillar Dozer
1—Pippin—Ford Pull shovel
4—Dump Trucks and Pick-up
2—Ingersoll-Rand Compressors 160 and 310
20—Diaphram pumps
1—LaPlant—Choat 5 yd. Hydraulic scraper

UNITED FOUNDATION CORPORATION
680 Lexington Rd. Union, N. J.
Phone: Unionville 2-4257

HEAT — PORTABLE HEATER SALE!



108 FEET OF DUCTS INCLUDED!

250,000 B.T.U. PORTABLE HEATER & DRYER

SALE PRICE

$224.00

freight prepaid

Herman Nelson portable, powerful 250,000 B.T.U. gasoline burning heaters with turbine-type blowers. 1½ h.p.-air-cooled, ball bearing engine. 108 ft. of flexible flameproof, waterproof ducts.

HEATING buildings under construction, shops, sheds, warehouses, barns, tunnels, hangars, spot-heating, etc.

DRYING concrete, plaster, mortar, paint, etc. Torrid blasts of heat.

PRE-HEATING engines, tractors, trucks, freight cars, equipment.

THAWING machinery, freight cars, tanks, pipelines, frozen areas, etc.

IMMEDIATE DELIVERY • SATISFACTION GUARANTEED OR PURCHASE PRICE REFUNDED
WIRE OR PHONE COLLECT • Your Heater can be shipped within 1 hour
Send for literature

BERNSTEIN BROS.
Since 1890
Phone 11704
164 N. Mechanic St. Pueblo, Colo.

PROFESSIONAL SERVICES

Cards arranged by areas, states, cities, names

Additional cards on following pages

NEW ENGLAND

Fay, Spofford & Thorndike

Engineers

Charles M Spofford — Ralph W. Horne
John Ayer — William L. Hyland
Bion A. Bowman — Frank L. Lincoln
Carroll A. Farwell — Howard J. Williams

Members, American Society of Civil Engineers

Airports, Bridges, Turnpikes
Water Supply, Sewerage and Drainage
Port and Terminal Works
Industrial Buildings

Designs — Investigations
Supervision of Construction
BOSTON — NEW YORK

Jackson & Moreland

Engineers and Consultants

Utilities and Industrials

Design and Supervision of Construction
Reports—Examinations—Appraisals
Machine Design—Technical Publications

Boston — New York

Chas. T. Main, Inc.

Engineers

Design and Supervision of Construction for Industrial Plants
Electrical, Steam and Hydraulic Engineering
Investigations, Reports and Appraisals
Chamber of Commerce Bldg.
80 Federal St., Boston, Mass.

Metcalf & Eddy

ENGINEERS

Investigations — Reports — Design
Supervision of Construction and Operation
Management — Valuation — Laboratory

1300 Statler Building, Boston 16

C. W. Riva Co.

Engineers — Edgar P. Snow

Highways, Bridges, Tunnels, Airports, Foundations, Sewerage, Water Supply, Reports, Design and Supervision.

511 Westminster St. — Prov. 3, R. I.

MIDDLE ATLANTIC

Greer & McClelland

Consulting Foundation Engineers

SOIL INVESTIGATIONS

Borings
Laboratory Tests
Foundation Designs & Analyses
Reports

98 Greenwood Ave. — Montclair, N. J.
2649 N. Main St. — Houston, Texas

Edwards, Kelcey & Beck

Reports, Design Supervision, Expressways, Port & Harbor Works, Terminals, Tunnels, Bridges, Water Supply, Industrial Plants, Traffic and Management Studies.

3 William Street — 250 Park Avenue
Newark 2, N. J. — New York 17, N. Y.

Porter, Urquhart & Beavin

O. J. Porter & Co.
Consulting Engineers
Airports-Highways-Dams-Structures
Foundations-Stabilization-Pavements
415 Frelinghuysen Ave., Newark 5, N.J.
76 Ninth Ave., New York 11, N. Y.
3568 West Third St., Los Angeles 5, Calif.
516 Ninth St., Sacramento 14, Calif.

W. W. Slocum & Co.

ENGINEERS

Industrial - Design - Management
National Newark Building
744 Broad St., Newark 2, N. J.

Boswell Engineering Company

Engineers — Surveyors

Topographic, Highway and Property Surveys. Tax Maps, Design, Supervision, Highways, Industrial Buildings, Sewers, Garbage Disposal Municipal Improvements, Airports
Ridgefield Park, New Jersey
Phone Diamond 2-6343

Frank E. Harley and Associates

Consulting Engineers

Design, Surveys, Plans and Construction Highways, Sewerage and Sewage Treatment, Water Supply and Purification, Municipal Problems.
Harley Bldg., 260 Godwin, Wyckoff, N. J.

B. K. Hough,

Consulting Engineer
Soils & Foundation Engineering

Site investigations, field and laboratory testing, design analysis for earthworks, foundations and pavements, inspection & control earthworks construction, engineering reports, consultation.
121 E. Seneca St., Ithaca, New York

Ammann & Whitney

Consulting Engineers

Design — Construction Supervision
Bridges, Buildings, Industrial Plants, Special Structures, Foundations, Airport Facilities, Expressways.

76 Ninth Avenue, New York 11, N. Y.
724 E Mason Street, Milwaukee 2, Wis.

Barker & Wheeler

Water Supply — Utility and
Sewerage — Industrial
Sewage Disposal — Valuations
Power Systems — Reports

New York City, 11 Park Place
Albany, N. Y. 36 State St.

Clinton L. Bogert Assoc.

Consulting Engineers

Clinton L. Bogert — Ivan L. Bogert
Robert A. Lincoln — Donald M. Ditmars
Water and Sewage Works
Refuse Disposal — Industrial Wastes
Drainage — Flood Control

624 Madison Ave., New York 22, N. Y.

Bowe, Albertson & Associates

Engineers

Water and Sewage Works—Industrial Wastes—Refuse Disposal—Municipal Projects—Airfields—Industrial Buildings—Reports—Designs—Estimates—Valuations—Laboratory Service.

110 William St., New York 7, N. Y.

Brown & Blauvelt

CONSULTING ENGINEERS

Industrial Plants
Bridges, Dams, Airports
Expressways, Parkways, Highways

Preliminary Reports
Engineering Design
Construction Supervision
Material Controls & Testing

Municipal Engineering Services
Tax Maps, Surveying

488 Fourth Ave., New York 16, N. Y.
140 Eighth Street, Pittsburgh, Pa.

Buck, Seifert & Jost

Consulting Engineers
(Formerly Nicholas S. Hill Associates)

Water Supply — Sewage — Hydraulic Developments, Reports and Valuations, Chemical and Biological Laboratories.
New York City, 112 E. 19th St.

Cotton, Pierce, Streander, Inc.

Associated Engineering Consultants

Water Supply, Treatment, Distribution
Sewage, Sewage Treatment
Refuse Disposal, Trade Wastes
Power Plants
Reports, Plans, Supervision

132 Nassau St., New York, N. Y.
PO Box 198, Hyde Park 36, Mass.
1405 W. Erie Ave., Phila. 40, Pa.
55 Caroline Rd., Gowanda, N. Y.

Ebasco Services Inc.

ENGINEERS
CONSTRUCTORS
BUSINESS CONSULTANTS

Design and Construction
Financial and Operating Consultation
Investigations and Reports
Consulting Engineering

Two Rector Street — New York
209 S. LaSalle Street — Chic. 4, Ill.
1625 I Street, N.W. — Wash. 6, D. C.

Hardesty & Hanover

Consulting Engineers

Successors to Waddell & Hardesty

Bridges
Long Spans of All Types
Movable—Lift, Bascule and Swing
Hanover Skew Bascule
Steel and Concrete Spans
Grade Crossing Eliminations

Other Structures
Foundations
Supervision, Reports, Appraisals

101 Park Avenue, New York 17, N. Y.

Frederic R. Harris, Inc.

CONSULTING ENGINEERS

F. H. Dechant, E. J. Quirin, E. H. Harlow

Harbors, Piers & Bulkheads, Drydocks.
Foundations, Soil Mechanics.
Sanitary & Industrial Waste Disposal.
Water Supply, Flood Control.
Airports, Highways, Bridges.
Power, Industrial Plants, Buildings.

27 William Street — New York
3 William Street — Newark
Fidelity Phila. Trust Bldg. — Philadelphia

Hazen & Sawyer

Engineers

Richard Hazen — Alfred W. Sawyer
Water and Sewage Works,
Industrial Waste Disposal,
Drainage
Reports, Design, Supervision of Construction and Operation

110 East 42nd St., New York 17, N. Y.

Howard, Needles, Tammen & Bergendoff

Consulting Engineers
Bridges and Structures

New York, N. Y., 55 Liberty St.
Kansas City, Mo., 1805 Grand Ave.

Knappen-Tippetts-Abbett-McCarthy

Engineers

Ports, Harbors, Flood Control, Power, Dams, Bridges, Tunnels, Highways, Subways, Airports, Traffic, Foundations, Water Supply, Sewerage, Reports, Design, Supervision, Consultation.

62 West 47th Street, New York City

Moran, Proctor Mueser & Rutledge

Consulting Engineers

Foundations for Buildings, Bridges and Dams; Tunnels, Bulkheads, Marine Structures; Soil Studies and Tests; Reports, design and supervision.

New York 17, N. Y. 420 Lexington Ave.

PARDO, PROCTOR, FREEMAN & MUESER
Ap. Corrfos 614 — Caracas, Venezuela

Parsons, Brinckerhoff Hall & Macdonald

ENGINEERS

Airports, Bridges, Tunnels, Highways, Traffic and Transportation Reports, Subways, Foundations, Harbor Works, Valuations, Power Developments, Industrial Buildings, Dams, Sewerage, Water Supply.

51 Broadway, New York 6, N .Y.

E. Lionel Pavlo

Consulting Engineer

Design, Supervision, Reports, Bridges, Highways, Expressways, Marine Structures, Industrial Construction Public Works, Airports

7 E. 47th St. — New York 17, N. Y.

Malcolm Pirnie Engineers

Civil & Sanitary Engineers

Malcolm Pirnie — Ernest W. Whitlock
Robert D. Mitchell — Carl A. Arenander
Malcolm Pirnie, Jr.

Investigations, Reports, Plans
Supervision of Construction and Operations.

Appraisals and Rates

25 W. 43rd St., New York 36, N. Y.

The Pitometer Company

Engineers

Water Waste Surveys
Trunk Main Surveys
Water Distribution Studies
Water Measurements & Special Hydraulic Investigations

New York, 50 Church St.

Alexander Potter Associates

Consulting Engineers

Water Works, Sewerage, Industrial Waste, Hydraulic Works, Reports, Designs, Appraisals.

50 Church St., New York, N. Y.

Clyde Potts Assoc.

Weston Gavett-Stanley N. Williams
Consulting Sanitary Engineers

Sewerage and Sewage Disposal
Water Works and Water Supply
Valuations and Appraisals

30 Church Street, New York 7

Preload Engineers Inc.

Founded - 1934

Consultants in Prestressed Design

Designers of more than 800 prestressed concrete bridges, buildings, tanks and high pressure pipe lines erected in North America since 1934.

Curson Dobell — *B. H. Thwaits*
Eric Molke — *Cedric Steiner*

955 North Monroe Street, Arlington, Va.

Sanderson & Porter

Engineers and Constructors

New York • Chicago • San Francisco

Scheidenhelm, F. W.

Consulting Engineer

Hydraulic Engineering; Hydro-electric Development; Water Supply; Flood Control; Engineering Problems relating to Water Rights and Water Power Law; Appraisals. 50 Church Street, New York 7, N. Y.

Seelye Stevenson Value & Knecht *Consulting Engineers*

Richard E. Dougherty, Consultant

Airports, Highways, Bridges, Dams, Water Supply, Sanitation, Tunnels, Piers, Industrial Plants, Reinforced Concrete, Steel, Industrial Waste Disposal, Foundations, Soil Studies. Civil — Mechanical — Electrical

101 Park Avenue New York 17, N. Y.

Severud-Elstad-Krueger

Consulting Engineers

Structural Design - Supervision
Reports - Buildings - Airports
Special Structures

415 Lexington Avenue
New York 17, N. Y.

Singstad & Baillie

Consulting Engineers

Ole Singstad — David G. Baillie, Jr.

Tunnels, Subways, Highways
Foundations, Parking Garages

24 State St. — New York 4, N. Y.

PROFESSIONAL SERVICES

Cards arranged by areas, states, cities, names — Additional cards on preceding and following pages

Frederick Snare Corporation

Engineers—Contractors

Harbor Works, Bridges, Power Plants, Dams, Docks and Terminals. Difficult and Unusual Foundations A Specialty.

233 Broadway, New York City 7

Havana, Cuba — Lima, Peru
Bogota, Colombia, Caracas, Venezuela, San Juan, Puerto Rico, Guayaquil, Ecuador.

D. B. Steinman

Consulting Engineer

BRIDGES

Design, Construction
Strengthening, Investigations, Reports, Advisory Service

117 Liberty St., New York 6, N. Y.

Henry W. Taylor

Consulting Engineer

Water Supply, Sewerage
Refuse Disposal, Incineration
Industrial Developments

151 W. Merrick Rd, Freeport, N.Y.

The J. G. White Engineering Corporation

Design - Construction
Reports—Appraisals

80 Broad Street, New York

Keis & Holroyd

Consulting Engineers

Formerly Solomon & Keis
since 1906
Water Supply, Sewage Disposal, Garbage & Refuse Incineration, Industrial buildings.

Troy, N. Y. — Ft. Lauderdale, Fla.

Capitol Engineering Corporation

Engineers—Constructors—Management

Bridges — Dams
Planning — Airports
Sewage Systems — Water Works
Design and Surveys — Roads & Streets
Executive Offices Dillsburg, Penna.

Gannett Fleming Corddry & Carpenter, Inc.

ENGINEERS

Dams, Water Works, Sewage, Industrial Wastes & Garbage Disposal, Highways, Bridges & Airports, Traffic & Parking —Appraisals, Investigations & Reports.

Harrisburg, Penna.

Branch Offices

Pittsburgh, Pa. — Philadelphia, Pa.
Daytona Beach, Fla., Pleasantville, N. J.

Modjeski and Masters

Consulting Engineers

Design, Supervision, Reports, Inspection and Investigations, of Bridges, Structures, and Foundations.

State Street Bldg. 33rd and Arch Sts.
Harrisburg, Pa. — Philadelphia 4, Pa.

Albright & Friel, Inc.

Consulting Engineers

Water, Sewage and Industrial Wastes Problems, Airfields, Refuse Incinerators, Dams, Power Plants, Flood Control, Industrial Buildings, City Planning, Reports, Appraisals and Rates, Laboratory.

121 So. Broad St., Philadelphia 7, Pa.

When you need a SPECIALIST in a hurry . . .

Engineering News-Record's Professional Service Section offers the quickest, most direct method of contacting consultants who may be available NOW.

Day & Zimmerman, Inc.

Engineers

Designs, Construction, Valuations
Reports and Management
Public Utilities and Industrials

New York — Philadelphia — Chicago

Frederick H. Dechant

Consulting Engineer

Chairman of the Board
Frederic R. Harris Inc.
Water Works, Industrial Wastes, Sewerage, Recovery Processes, Hydraulic Works, Gas Plants.
Philadelphia: Fidelity Phila. Trust Bldg. — New York: 27 William St.

Fridy - Gauker - Truscott & Fridy

Architects & Engineers

Water Sewerage - Industrial Waste Incineration - Power & Distribution
Airport - Building - Town Planning
1321 Arch Street - Philadelphia 7, Pa.

G. G. Greulich

Consulting Engineer

Investigations, Reports, Advice. Pile Foundations, Sheet Piling, Cofferdams, Bulkheads, Piers, Bridge Decks, Bank Vaults.

778 Osage Rd. — Pittsburgh, Pa.

Hunting, Larsen & Dunnells, *Engineers*

Industrial Plants—Warehouses, Office and Commercial Buildings, Steel and Reinforced Concrete. Design and Supervision. Reports.

1150 Century Bldg., Pittsburgh, Pa.

Morris Knowles Inc.

Engineers

Water Supply and Purification Sewerage and Sewage Disposal, Valuations, Laboratory, City Planning.

Pittsburgh, Pa.

Peter F. Loftus Corporation

Engineering and Architectural Consultants and Designers

First National Bank Bldg.
Pittsburgh 22, Pennsylvania

Cable Address—
"LOFTUS Pittsburgh"

Gilbert Associates, Inc.

Engineers • Consultants • Constructors

Reading, Pa.

Utilities • Industrials • Municipals
Power • Water • Sewerage

New York • Philadelphia • Washington
Rome • Manila • Medellin

Michael Baker, Jr., Inc.

The BAKER ENGINEERS, Civil Engineers, Planners, and Surveyors. Municipal Engineers, Airport Design, Highway Design, Sewage Disposal systems, Water Works Design and Operation, City Planners. All Surveys.
Home Office: Rochester, Pa., Branch Offices: Jackson, Miss., Harrisburg, Pa.

Weigle Engineering Co.

CIVIL ENGINEERS

William E. Weigle — Robert E. Weigle
Donald K. Weigle — Robert A. Meckley

Sewers, Bridges, Airports, Municipal Work
Design and Construction Supervision
Estimates and Flood Control
30 N. Duke St., York, Pa.

SOUTH

Palmer and Baker, Inc.

Consulting Engineers - Architects

Naval Architects - Marine Engineers
Surveys-Reports-Design-Supervision Consultation

Transportation and Traffic Problems
Tunnels-Bridges-Highways-Airports
Industrial Buildings
Waterfront and Harbor Structures
Graving and Floating Dry Docks
Vessels, Boats and Floating Equipment
Complete Soils, Materials and Chemical Laboratories

Mobile, Ala. — New Orleans, La.
Washington, D. C. — Houston, Texas

Polk, Powell and Hendon

Consulting and Designing Engineers

Municipal and Industrial Works, Investigations and Reports
621 Stallings Building,
Birmingham 3, Alabama

Duval Engineering & Contracting Co.

General Contractors

FOUNDATION BORINGS
For Engineers and Architects.

Jacksonville, — Florida

Rader Engineering Co.

Water Works, Sewers, Refuse Disposal, Ports, Harbors, Flood Control, Bridges, Tunnels, Highways, Airports, Traffic, Foundations, Buildings, Reports, Investigations, Consultations.

111 N.E. 2nd Ave., Miami 32, Florida

Law-Barrow-Agee Laboratories, Inc.

Soils Engineers & Consultants

Soil Testing—Soil Boring—Rock Drilling—Load Testing—Field Control —Engineering Studies—Chemical Analysis—Physical Testing
Box 1558 Atlanta 1, Ga.
Serving the entire South

Patchen & Zimmerman

Engineers

Construction Plant, Cofferdams, Structures, Industrial Plants, Dams, Sewerage and Sewage Treatment, Water Supply and Treatment, Supervision, Surveys, Reports.

Augusta, Ga. — Anniston, Ala.

Eustis Engineering Company

FOUNDATION AND SOIL MECHANICS INVESTIGATIONS

Soil Borings — *Laboratory Tests*
Foundation Analyses — *Reports*

3635 Airline Highway
New Orleans 20, La.

Atlas Engineering Corp.

Industrial Plant Design • Research Laboratories • Nuclear Development Facilities • Housing and Public Works • Investigations • Reports

Knoxville and Oak Ridge Tennessee

MIDDLE WEST

Alvord, Burdick & Howson

CONSULTING ENGINEERS

Water Works — Sewerage
Water Purification — Sewage Treatment
Flood Relief — Power Generation
Drainage — Appraisals

20 North Wacker Drive, Chicago

A. J. Boynton & Co.

ENGINEERS

Fixed and Movable Bridges
Structures
Foundations

Design
Construction

109 N. Wabash Ave., Chicago 2.

Consult these Specialists:

Let them save your time by bringing their broad experience in their specialty to bear on your problems.

Consoer, Townsend & Associates

Water Supply, Sewerage, Flood Control & Drainage, Bridges, Express Highways, Paving, Power Plants, Appraisals, Reports, Traffic Studies, Airports, Gas & Electric Transmission Lines.

351 East Ohio St., Chicago 11, Illinois

Ralph H. Burke, Inc.

CONSULTING ENGINEERS

Complete Architectural and Engineering Services
Plans, Supervision, and Reports

Expressways - Grade Separations
Traffic Studies - Parking Structures
Underground Garages- Shore Protection
Parks-Field Houses-Municipal Works
Airports and Air Terminal Buildings

20 North Wacker Drive, Chicago 6, Ill.

De Leuw, Cather & Company

CONSULTING ENGINEERS

Transportation, Public Transit and Traffic Problems

Industrial Plants — Grade Separations
Railroads — Expressways
Subways — Tunnels
Power Plants — Municipal Works

150 North Wacker Drive
Chicago 6, Ill.

79 McAllister Street
San Francisco 2, Calif.

Greeley and Hansen

Engineers

Water Supply, Water Purification
Sewerage, Sewage Treatment
Flood Control, Drainage, Refuse Disposal

220 S. State Street, Chicago 4

Harza Engineering Co.

Consulting Engineers

L. F. Harza
E. Montford Fucik — Calvin V. Davis

Hydroelectric Plants and Dams
Transmission Lines
Flood Control, Irrigation
River Basin Development

400 West Madison Street — Chicago 6

Pan American Consultants

Engineers

River & Harbor Development-Hydroelectric Power-Dams-Ports-Flood Control-Irrigation-Reclamation-Airports-Water Supply-Sewage & Industrial Waste Treatment
Reports - Consultation - Design

Midland Bldg., 176 W. Adams St., Chicago 3.

Hazelet & Erdal

CONSULTING ENGINEERS

Fixed Bridges, Movable Bridges, Industrial Plants, Expressways, Airports, Dams

Monadnock Block, Chicago 4, Ill.
Dixie Terminal Bldg., Cincinnati 2, O.
Commerce Bldg., Louisville 2, Ky.

Pioneer Service & Engineering Co.

Consulting and Design Engineers
Operations - - - Purchasing
Steam - - - Hydraulic - - - Gas
Public Utilities - - - Industrials

231 So. La Salle St. — Chicago 4

Sargent & Lundy

ENGINEERS

Steam and Electric Plants
Utilities—Industrials
Studies—Reports—Design
Supervision

Chicago

The Hinchman Corporation

Consulting Engineers

CORROSION CONTROL — Surveys, Reports, Design, Specifications, Evaluation

UNDERGROUND UTILITIES—Location, Mapping, leakage surveys, electrical grounding systems

HOLLOW PILING — Directional Surveys by electronics

Francis Palms Bldg. — Detroit 1, Mich.

PROFESSIONAL SERVICES

Cards arranged by areas, states, cities, names

Additional cards on preceding pages

Chas. W. Cole & Son

Sewerage, Sewage Treatment, Industrial Wastes, Water Supply, Water Treatment, Airports, Industrial Buildings.
Chas. W. Cole, Sr. Chas. W. Cole, Jr.
Ralph J. Bushee, M. J. McErlain
220 W LaSalle, South Bend, Ind.

The Austin Company

Design and Construction

Manufacturing and Process Plants
Airports & Air Transport Buildings
Railroad Terminals and Facilities
Power Plants—Industrial & Institutional
Industrial Office Buildings and Laboratories
Reports and Plant Location Surveys
New York CLEVELAND Los Angeles
Chicago Houston Oakland
Detroit Seattle

Havens and Emerson

W. L. Havens C. A. Emerson
A. A. Burger F. C. Tolles F. W. Jones
W. L. Leach H. H. Moseley J. W. Avery
CONSULTING ENGINEERS
Water, Sewerage, Garbage, Industrial Wastes, Valuations—Laboratories
Leader Bldg. Woolworth Bldg.
Cleveland 14 New York 7

Edward Jabour

Consulting Electrical Engineer
Design & Layout
Utilities, Oil Refineries,
Process (Chemical & Industrial Plants)
Special Services—To Contractors,
Chemical Plants, Piping Fabricators
1080 Atlantic Toledo, Ohio
Walbridge 5671 Ext. 24

Toledo Testing Laboratory

Engineers—Chemists

Concrete — Soils — Asphalt
Inspection Research
Tests Development
Foundation Investigation
Borings — Diamond Drilling — Load Tests
Soils Mechanics Laboratory

1810 North 12th St. Toledo 2, Ohio

Jones, Henry & Williams

Consulting Sanitary Engineers

Water Works, Sewerage & Treatment
Waste Disposal
Security Building Toledo 4, Ohio

REMEMBER!!

You can depend on these consultants for a fast, accurate solution to your problems. Consult them when necessary.

WEST OF MISSISSIPPI

Heron Engineering Co.

Consulting Engineers

For all types of Aerial Tramways, Cableways, and Suspended Structures
2000 South Acoma St.
Denver 19, Colorado

Stanley Engineering Company, *Consulting Engineers*

Airports - Drainage - Electric Power
Flood Control - Industrial - Rate Studies - Sewerage - Valuations - Water Works
Hershey Building Muscatine, Ia.

Black & Veatch

Consulting Engineers

Water - Sewage - Electricity - Industry
Reports, Design, Supervision of Construction, Investigations, Valuation and Rates.

4706 Broadway, Kansas City 2, Mo.

Burns & McDonnell

Consulting and Designing Engineers

P. O. Box 7088, Kansas City 2, Mo.
1404 E. 9th St., Cleveland 14, Ohio

Harrington & Cortelyou

Consulting Engineers
Frank M. Cortelyou
E. M. Newman F. M. Cortelyou, Jr.
Movable and Fixed Bridges of All Types, Foundations, and Related Structures.
1004 Baltimore Kansas City 6, Mo.

Russell and Axon

Consulting Engineers

Civil — Sanitary — Structural
Industrial — Electrical
Rate Investigations

408 Olive St. St. Louis 2, Mo.
Municipal Airport, Daytona Beach, Fla.

Sverdrup & Parcel, Inc.

Consulting Engineers

Bridges, Structures and Reports, Industrial and Power Plant Engineering.

Syndicate Trust Bldg., St. Louis 1, Mo.
220 Bush St., San Francisco 4, Calif.

CHECK this Section whenever you need professional advice.

William J. Wenzel

Consulting Engineer

Great Falls, Montana

Developing the Great Northwest

Benham Engineering Co.

Established in 1909

Design and Construction Engineering Services for Water and Sewage—Highways and Structures—Airports—Power and Heating Plants
Suite 550 American National Building
Oklahoma City, Oklahoma

Lockwood & Andrews

Consulting Engineers

Airports, Paving, Industrial Plants, Drainage & Sewerage, Site Locations, Soils & Foundations, Water Supply, Structures, Harbor Works, Valuations, Reports — Design — Supervision
Union Nat'l Bank Bldg., Houston, Tex.

FAR WEST

John S. Cotton

Consulting Engineer

Hydroelectric, water supply, irrigation, and multiple purpose projects; flood and erosion control; river basin development planning; dams and their foundations; tunnels; marine structures; valuations; rates.
28 Brookside Dr., San Anselmo, Calif.

D. B. Gumensky

Civil and Structural Engineer

Hydroelectric Power, Water Supply
Dams, Tunnels, Unusual Structures
All Types Structural Design
Complete Development of Projects

1047 Sierra, Berkeley, Calif.

International Engineering Company, Inc.

ENGINEERS

Investigations - Reports - Design
Procurement - Field Engineering
Domestic and Foreign
74 New Montgomery St.
San Francisco 5, California.

FOREIGN

Hutchings & Milani, Ltd.

Engineers & Constructors

Industrial - Roads - Power Plants - Dams - Tunnels - Harbor Works - Foundations - Hotels
CARIBBEAN - WEST INDIES - SOUTH AMERICA
BERMUDA-CARIBBEAN CONSULTANTS, LTD.
Architects & Engineers.
Design - Reports - Investigations
L. C. Milani, ASCE; C. W. Abbott, R.I.B.A.; N. J. Senesey, A.I.A.; P. Coller; T. F. Carr, H. J. Williams; S. H. Pace; W. Weir.
TON, BERMUDA.
BOTH HEAD OFFICES AT HAMIL-

Atlantic, Gulf and Pacific Company of Manila

Engineers
Design - Construction
Inquiries invited for work in the Philippines and Far East.
P. O. Box 626, Manila, Philippines
Cable Address: DREDGING Manila

The Foundation Engineering Company of Puerto Rico

Consulting Engineers

Foundation and Soil Mechanics Investigations, Laboratory analyses, reports and recommendations, design of structures, Supervision.
P. O. Box 821, San Juan, Puerto Rico

INSPECTION & TEST

Robert W. Hunt Company

Inspection and Tests of Engineering Materials and Equipment.
General Offices and Laboratories
175 West Jackson Blvd., Chicago 4
All Principal Cities

Johnson Soils Engineering Laboratory

Engineering design and construction tests run from MOBILE LABORATORY UNITS at construction site.
Field load bearing tests.
193 West Shore Ave., Bogota, N. J.
Bogota-Hubbard 7-4408

The Haller Testing Laboratories, Inc.

Testing and Inspection of Construction Materials
Complete Soils Laboratory
Load Tests—Soils & Structures
Concrete and Bituminous Materials

861 2nd Ave., New York 17, N. Y.
Plainfield, N. J. New Haven, Conn.
Boston, Mass.

Engineers Testing Laboratory, Inc.

Foundation and Soil Mechanics Investigations

Soil Borings Laboratory Tests
Foundation Analyses Reports
3313 Main St. Houston, Texas

MARINE DIVING

Walter Detrick

Marine Diver

Construction • Repair • Salvage
Quincy, Illinois
3006 Phones 750

SEARCHLIGHT SECTION

This index is published as a convenience to the reader. Every care is taken to make it accurate but SEARCHLIGHT SECTION assumes no responsibility for errors or omissions.

Air Compressor Rental Co..... 101
Albert Pipe Supply Co., Inc..... 100
Ambursen Dam Co., Inc..... 101
American Air Compressor Corp..... 101
Amerlux Steel Products Corp..... 102

Bechtel Corporation 97
Bernstein Bros..... 102
Bixby Inc., R. W..... 97

Clark-Aiken Co..... 100
Clemens Construction Co..... 100
Concrete Equipment Co..... 100
Contractors Machinery Co..... 102
Contractors Trading & Equipment Corp. 101
Darien Corp..... 102

Davidson Pipe Co., Inc..... 100
Deatherage & Son, George E..... 98
Drachman Steel Co., Inc., Hy..... 100

Equipment Corporation of America.. 99

Frank, M. K..... 100
Frazier-Davis Construction Co....100, 101

Gillis & Co..... 100
Glazer-Steel Corp..... 98
Globe Pipe & Fitting Co..... 100

Halliburton Oil Well Cementing Co.. 100
Hunkin-Conkey Constr. Co..... 101

Lee & Co..... 98
Lichtenberg, Samuel..... 97

McDonald Railway Supply Co..... 102
Midwest Steel Corp..... 100
Mississippi Valley Equipment Co.... 102

Orban Co., Inc., Kurt..... 102

Sherman Transfer Co., Roger..... 101
Stanhope Inc., R. C..... 102
State Personnel Board..... 97

Tagco Inc. 100
Thomas, Z. W..... 102
Tractor & Equipment Co..... 101

United Foundation Corp..... 102

Walsh Co., Richard P..... 101
Williams Construction Co.....98, 100
Wilson Engineering Co..... 98

Get WINTER CONCRETE with HIGH EARLY STRENGTH

by using

SOLVAY

CALCIUM CHLORIDE

- Lowers Costs!
- Saves Time Between Operations!
- Permits Quicker Finishing!
- Cuts Protection Time!
- Assures Full Ultimate Strength!

Today—with SOLVAY Calcium Chloride, it is both possible and practical to carry on concreting operations during the winter months. The addition of SOLVAY Calcium Chloride assures fast setting to permit quick finishing, full ultimate strength and a short protection period—even in freezing weather.

Whether you do your own mixing or use transit-mix concrete, you will be sure of quality work, minimum cost and a faster operation if you are sure that your specifications include: 1. The use of heated water and materials. 2. The use of SOLVAY Calcium Chloride in the mix. 3. The use of proper covering or protection against anticipated temperatures.

Send for FREE BOOK Containing Full Details!

"The Effects of Calcium Chloride on Portland Cement" is filled with important information and answers to your questions about the use of calcium chloride in concrete. Mail coupon below for your free copy.

When ordering READY MIXED CONCRETE IN COLD WEATHER

Be sure to *Specify* SOLVAY Calcium Chloride

SOLVAY PROCESS DIVISION
Allied Chemical & Dye Corporation
61 Broadway, New York 6, N. Y.

Please send me without obligation your book, "The Effects of Calcium Chloride on Portland Cement."

Name .....

Company ..... Position .....

Address .....

City ..... Zone .... State EN-1

NEW PRODUCTS

Tandem axle units lead the payload parade of . . .

Ford's 1954 trucks

Introducing its 1954 trucks, the Ford Motor Co. marks a milestone with the production of its first tandem axle unit. Two series of this type are available—the T-700 suitable for a 3½-yd concrete mixer or 5 to 6-yd dump body and a T-800 rated to carry a 5-yd mixer or 10-yd dump.

In the T-700 tandem, Ford offers a choice of a new 138-hp OHV V-8 or a 152-hp OHV V-8 gasoline engine. The T-800 is powered by the manufacturer's biggest truck engine, a 170-hp OHV V-8. All three engines are designed along the large bore, short-stroke line—said to reduce cumulative piston travel and thereby provide longer engine life.

Both series are aimed at the off-road market as well as for highway hauling. For on-highway jobs their double axles bring them within the 18,000-lb limit enforced by 34 states and the 32,000-lb limit on dual axles in 27 states.

In these trucks, the load weight is distributed from frame to springs at four points to prevent single-point stress concentration. Rubber bushings at ten wear points of torque arms and equalizer beams have been included to reduce shock and eliminate lubrication needs.

A power divider equalizes driving power between axles and a third differential is added to eliminate axle fight.

Level-load stress distribution, regardless of truck tilt, is said to be achieved with the unit's torque rod and equalizing beam design. This is of particular importance when uneven or shifting loads are to be hauled.

Wheelbases in the T-700 series are 144, 156, 175 and 192 in. with maximum gross vehicle weight of 27,000 lb and maximum gross combined weight of 42,000 lb. Rear tandem rating is 22,000 lb.

The wheelbases of the T-800 are the same as the T-700 with maximum GVW of 40,000 lb. and maximum GCW of 60,000 lb. The rear tandem rating is 32,000 lb.

Standard equipment on both series

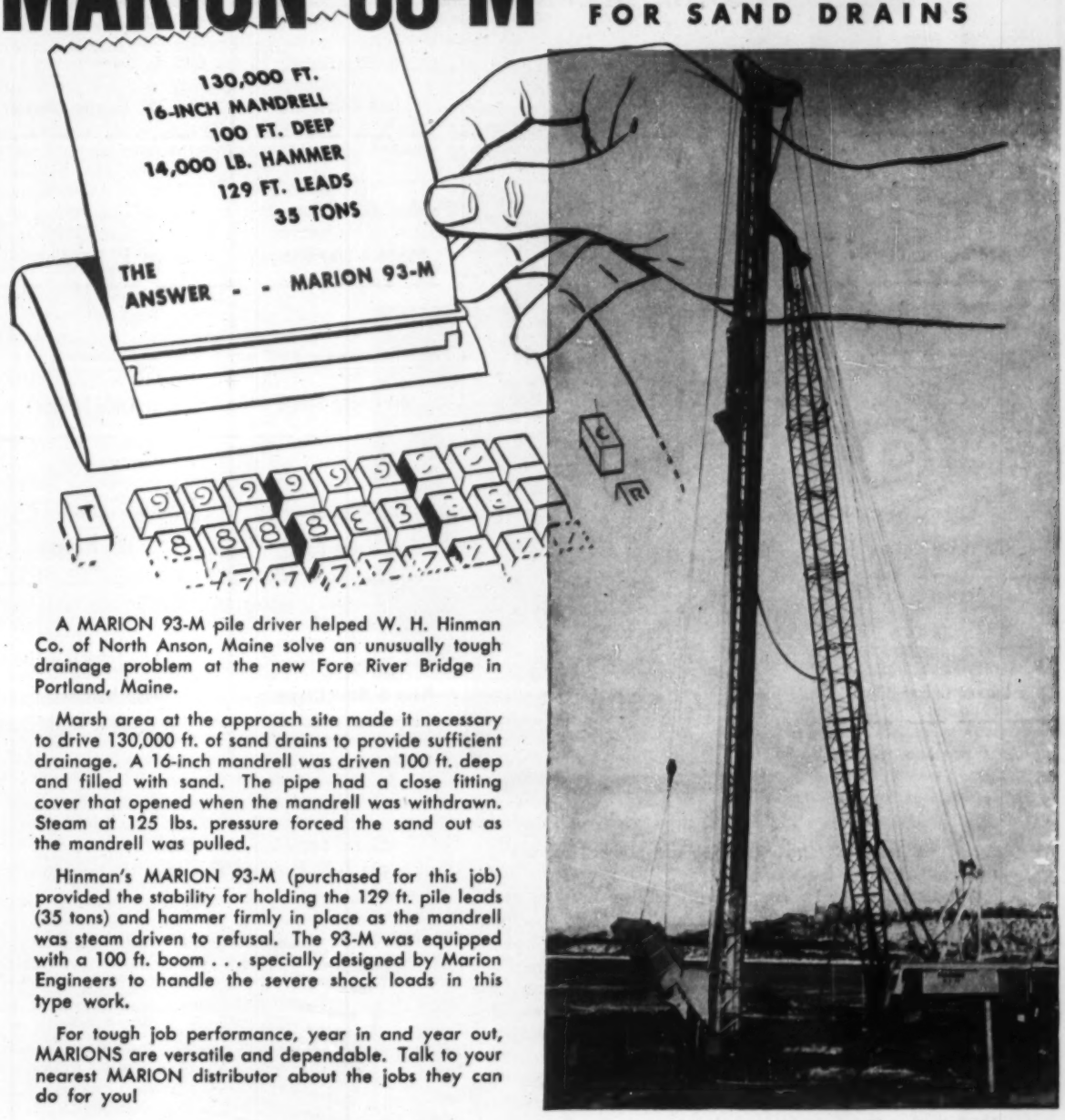
(*Continued on page 109*)

NEW FORD ENGINE SPECIFICATIONS

Engine	Displacement	Horsepower	Torque	Bore	Stroke	Compression Ratio
Cost Clipper Six..	223 cu. in.	115 @ 3900 rpm	193 @ 1000–2200	3.62	3.60	7.2
Power King V-8..	239 cu. in.	130 @ 4200 rpm	214 @ 1800–2200	3.50	3.10	7.2
Power King V-8..	256 cu. in.	138 @ 3900 rpm	226 @ 1900–2400	3.62	3.10	7.2
Cargo King V-8..	279 cu. in.	152 @ 3800 rpm	246 @ 1800–2400	3.56	3.50	7.2
Cargo King V-8..	317 cu. in.	170 @ 3900 rpm	286 @ 1700–2300	3.80	3.50	7.2

The Right Answer for a Marsh Drainage Problem in Maine

MARION 93-M as a pile driver FOR SAND DRAINS



A MARION 93-M pile driver helped W. H. Hinman Co. of North Anson, Maine solve an unusually tough drainage problem at the new Fore River Bridge in Portland, Maine.

Marsh area at the approach site made it necessary to drive 130,000 ft. of sand drains to provide sufficient drainage. A 16-inch mandrell was driven 100 ft. deep and filled with sand. The pipe had a close fitting cover that opened when the mandrell was withdrawn. Steam at 125 lbs. pressure forced the sand out as the mandrell was pulled.

Hinman's MARION 93-M (purchased for this job) provided the stability for holding the 129 ft. pile leads (35 tons) and hammer firmly in place as the mandrell was steam driven to refusal. The 93-M was equipped with a 100 ft. boom . . . specially designed by Marion Engineers to handle the severe shock loads in this type work.

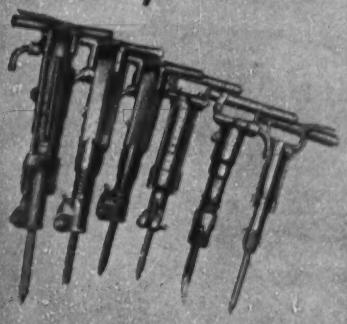
For tough job performance, year in and year out, MARIONS are versatile and dependable. Talk to your nearest MARION distributor about the jobs they can do for you!

MARION POWER SHOVEL CO.
MARION, OHIO, U. S. A.

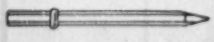
OFFICES AND WAREHOUSES IN ALL PRINCIPAL CITIES

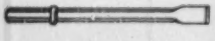
MARION
from ⅜ cu. yd. to 45 cu. yds.

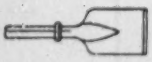
for every Ingersoll-Rand Paving Breaker

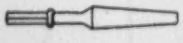


an engineered line of LONGER-LASTING TOOLS AND ACCESSORIES

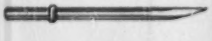

Moil Points


Narrow Chisel Bits

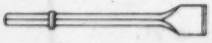

5-Inch Asphalt Cutters


Boulder Breakers

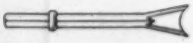
Sheathing Drivers


Curved Chisel Bits

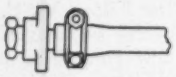
Moil Point Blanks


3-Inch Chisel Bits

5½-Inch Clay Scoops

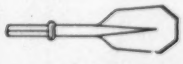

Broaching Steels

Tamping Pads


Hose & Hose Coupling

Wedge Points

2" x 12" Digging Chisels


3" and 5" Flat Picks

Detachable Shanks

2" x 12" Wedges

Hose Menders

IT'S THE BREAKER that supplies the power, but it's the *tool* that delivers the *work!*

That's why all Ingersoll-Rand paving breaker steels and accessories are made to the most exacting specifications. Only tool steel of the proper analysis and physical characteristics is used. Advanced production methods and controls in heat treating and inspection assure the right combination of hardness and toughness in the finished product. All accessories are tempered, ready for immediate use.

This extra care and precision pays off in longer tool life. Many users report that I-R accessories have cut their replacement costs in half!

Ingersoll-Rand

11 Broadway, New York 4, N.Y.

Send for this new Bulletin on I-R Paving Breaker Accessories

Here, in one 16-page volume, you'll find complete data on all tools and accessories for use with all Ingersoll-Rand paving breakers. Ask your I-R representative for a copy — or write to Ingersoll-Rand, 11 Broadway, New York 4, N.Y.

974-15

ROCK DRILLS • AIR TOOLS • DIESEL AND GAS ENGINES • COMPRESSORS • CENTRIFUGAL PUMPS • VACUUM EQUIPMENT

includes vacuum boosted power brakes with a piston-type booster. Air-over-hydraulic is also available on the T-700 and full air brakes are available on the T-800. Power steering is optional on both.

• **159 conventional models**—Besides the eight models in the T-700 and four in the T-800 series, Ford offers a total of 159 combinations of wheelbases and engines in its conventional F series.

The big story here is horsepower. The five new engines have been power boosted over last year's models by as much as 23 per cent. Starting from the bottom of the power pile, the new 115-hp Cost Clipper Six is an improved version of the older 101-hp six. 130 and 138-hp Power King engines replace the former L-head 106-hp V-8 and the 112-hp Big Six. The cargo King engines have been souped up from 145 to 152 and from 155 to 170 hp.

All five of the new power units feature the short stroke design and deepened block construction. On the V-8's, this latter feature gives the engine a Y-shaped end view appearance. FORD DIV., FORD MOTOR CO., P. O. BOX 638, DEARBORN, MICH.

Long arm of the Subscout reports soundings instantly

Fifty feet of coaxial cable, a dial and a diaphragm take the difficulty out of depth recording. Called the Subscout, the instrument consists of a vinyl plastic diaphragm enclosed in rigid plastic case open at one end so that varying pressures may act on the diaphragm. These pressure changes are transmitted through a line to a sensitive aneroid-type indicator head. Linked to a dial indicator, this head translates the pressure impulses into feet of water measurements.

For making submarine profiles, the diaphragm is trailed by a moving boat, and readings taken periodically —length of the periods will vary with the speed of the traverse. Accuracy of results with this method will not be extremely high because of the large number of variables involved including bottom vegetation, but the method can prove useful for reconnaisance and rough acre-feet computations.

Another use suggested for the Subscout is the remote reading of depths at dams and reservoirs. Moreover the instrument can find use as a depth indicator at wells or tanks.

The dial face has been calibrated

(*Continued on page 110*)

the most versatile hand level you can own . . .

LEUPOLD ABNEY LEVEL

Milled slide holds 3 interchangeable scales:

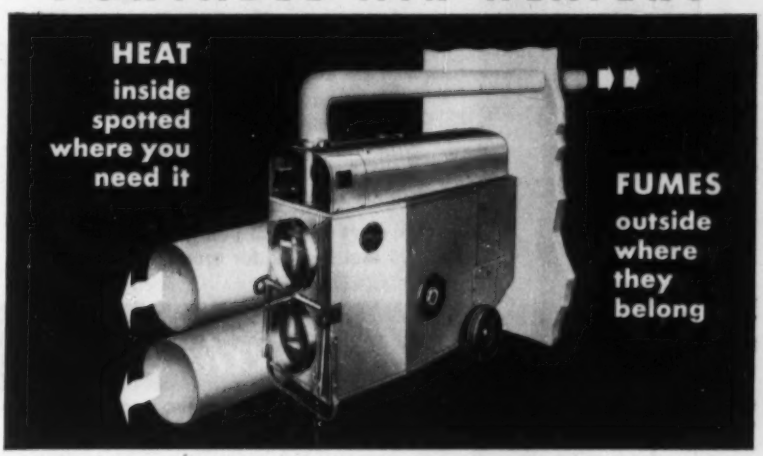
per cent	topographic
degrees	chainage corrections

Convenience-engineered design permits immediate use of any scale without removing and reversing arc frame. *Controlled* motion of index arm makes easier and more accurate readings. *Internal* focus on bubble.

Overall length . . . 6 ½"
Radius of arc . . . . 1 ¾"
Complete with saddle leather case with belt loop.
Choice of any 3 scales, $30.00

Write for information on the complete line of LEUPOLD levels.
precision engineering instruments since 1907
LEUPOLD & STEVENS INSTRUMENTS, Inc.
4445 N. E. GLISAN STREET • PORTLAND 13, OREGON

SAFE **HERMAN NELSON**
PORTABLE AIR HEATERS



Cold weather work slowdowns needn't bother you this winter. Put Herman Nelson Portable Air Heaters on the job—at construction sites, in warehouses, loading areas, anywhere you want temporary or emergency heat. Direct clean heated air wherever you need it through flexible canvas ducts. With Herman Nelson there's no fire danger, no carbon monoxide, no fumes, smoke or soot. All combustion products are safely vented outside. What's more, you have the added protection of lower surface temperatures and automatic safety controls. Herman Nelson has the only complete line of completely safe Portable Air Heaters. Models available from 125,000 to 450,000 BTU. Oil or gasoline fired, electric or gasoline powered.

HERMAN NELSON
PORTABLE AIR HEATERS
Another Product of American Air Filter Company, Inc.
Moline, Illinois

Get all the FACTS about ALL Portable Heaters

American Air Filter Company, Inc.
Dept. 26, Moline, Illinois

Please rush my free copy of booklet "Guide to the Selection and Use of Portable Space Heaters."

NAME _____
COMPANY _____
TYPE OF BUSINESS _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____

Need LONG Piling?

BAXCO LONG DOUGLAS FIR creosoted piling our specialty

With our own stands of Douglas fir, with yards and treating plants strategically located along the Pacific Coast—
With our many years of experience and "know-how" in treating Douglas fir—
We are your *Best Bet* for LONG Piling.

We carry stocks of piling up to 125 foot lengths for prompt shipment.

J. H. Baxter & Co.

200 BUSH ST., SAN FRANCISCO 4, CALIF.
3450 Wilshire Blvd., Los Angeles 5, Calif.

BAXCO CORPORATION
541 Pittock Block
Portland, Oregon

J. H. Baxter & Co. of Oregon
P.O. Box 752
Eugene, Oregon

GUNITE
Since 1915
CONCRETE
SAND AND CEMENT
Placed by Air

38 YEARS OF EXPERIENCE PLUS—Hundreds of nationally known clients is evidence of our engineering and construction ability to produce "Gunite" concrete construction at a lower overall cost.

Send for specifications and bulletins—no obligation.
See our catalog in Sweets

GUNITE CONCRETE & CONST CO
ENGINEERS CONTRACTORS
1301 WOODSWETHER RD. KANSAS CITY, MO
CHICAGO ST. LOUIS MINNEAPOLIS
DENVER HOUSTON NEW ORLEANS

BUILD With the BEST

DESLAURIERS
ROUND COLUMN FORMS
Sturdy • Straight • True
Since 1888—the standard in the construction industry...for lease only or, for lease-and-erection. Diameters: 12" to 56" and larger; any height. Two attractive capitals.

Write today for [illegible] Folder or quotation
DesLauriers [illegible] Mould Co., Inc.
2003 Central St., Evanston, Ill.
Chicago • Detroit • Oakland

NEW PRODUCTS

for water depth at 70 F and 30 in. (Hg) barometric pressure, but variations in temperature, pressure or type of liquid can be compensated for mathematically.

The entire unit is factory sealed and plastic coated so that it may be used on almost any liquid without fear of corrosion. With a 50-ft line the Subscout weighs only 10 lb; with 25 ft of line the total weight is reduced to 7½ lb. AERCO IND., P.O. Box 996, SPRINGFIELD, MASS.

2,200 gph at 10-ft head moved by compact sump pump

Designed for portable or stationary service, a new automatic electric submersible sump pump with a 1¼-in. discharge has a capacity of 2,200 gph at a discharge head of 10 ft or 400 gph at 24-ft head. Operable on continuous or intermittent duty, the new pump features positive priming without venting and has a reported 18-in. pump down range. Compact, the unit measures only 12½ in. high and 10 in. in dia. Weight is 40 lb.

Powered by a ½-hp motor the pump has automatic starting and stopping levels of 8 and 2 in. above sump bottom. Starting level may be increased to 20 in., however, by simply removing the top electrode tip. Manual starting is also provided by a momentary contact switch—automatic stopping is not affected. PENBERTHY INJECTOR CO., 1242 HOLDEN AVE., DETROIT 2, MICH.

Arc welding cable sports grease-resistant jacket

A tough neoprene compound (meets ASTM Spec D-752) is used to jacket a newly developed arc welding cable. The neoprene coating is reported resistant to heat, hydrocarbons, oils and greases as well as to acid attack and therefore is said to give the cable greater durability under severe service conditions.

The conductor is composed of fine copper wires to permit greater flexibility. Packed in 250-ft coils or 1,000-ft reels the cable comes in sizes from No. 6 to No. 4/0. DALWELD CO., 1 BERTEL AVE., MT. VERNON, N. Y.

New jacks translate 100 lb of air into 30-ton forces

A new jack incorporates the use of 80 to 100 lb of compressed air to operate a separate hydraulic pump. The air motor is mounted on a port-

(*Continued on page 112*)

IN BUILDING CONSTRUCTION...

MEN AND METHODS

MAKE THE DIFFERENCE

A building is no better than its builders.

The benefits of good design and careful specification of materials can be realized only if the builder does his job well. His men and methods make the difference.

The George A. Fuller Company is known throughout the United States and in many foreign countries for successful building construction, for skill and "know-how" which *do* make the difference.

Fuller offers you depth of organization and experience gained in handling practically every type of building project — ranging from industrial plants to monumental buildings of advanced design.

The Fuller record is always available to you — written not only in steel and concrete, but in 72 years of good relations with owners, architects and engineers.

INDUSTRIAL PLANTS • HOSPITALS
LABORATORIES • OFFICE BUILDINGS
SCHOOL AND COLLEGE BUILDINGS
CHURCHES • HOTELS • BANKS
ARENAS • HOUSING • THEATERS
TERMINALS • STORES AND SHOPPING
CENTERS • BROADCASTING STUDIOS
MONUMENTAL BUILDINGS

Sign of Leadership in Building Construction

GEORGE A. FULLER COMPANY

NEW YORK • BOSTON • CHICAGO • PITTSBURGH • WASHINGTON • ATLANTA • LOS ANGELES

able buggy and comes complete with 50 ft of ½-in. air hose and 6-ft of hydraulic hose.

A time and labor saver, the new jack is also said to be safer since it permits the operator to stand at a distance in the event that the ram should slip while under pressure.

Four hydraulic ram sizes are available—4½, 7½, 10 and 28 in. in length—capable of moving 30 tons in any direction a distance of 2, 3½, 6 and 20 in.

The entire unit, including pump, buggy and accessories weighs 150 lb. DUFF-NORTON MFG. CO., P.O. BOX 1899, PITTSBURGH 30, PENNA.

New product briefs . . .

• **Large augers**—Heavy duty-flight type augers of 16, 20, 22, 24, 30 and 36-in. diameter have been added to the line of earth boring tools manufactured by the Petersen Engineering Co., Santa Clara, Calif. Especially designed for large jobs and for gravel or loose material the new augers are said to complete the hole in many less trips in and out due to added carrying capacity of additional flights. The Pengo flight augers now in production are made in 26-in. lengths for use on all makes of boring machines and also 34-in. lengths for use on machines mounted sufficiently high to accommodate these long flights.

• **Engine generators**—The Wincharger Corp., Commerce Bldg., Sioux City, Iowa, has stepped up the continuous operating capacity of their contractors' model engine generator, Model F4500, from 2,500 watts to 3,000 watts. This unit has a motor starting capacity of 4,500 watts. A-C current is supplied at 115 volts, 60 cycles, single phase. A Briggs & Stratton or Wisconsin engine may be used with the new F series of Winco generators.

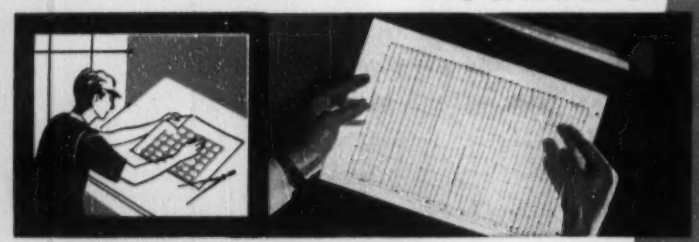
• **Turbine pump motors**—Horsepower ratings of totally-enclosed and explosion-proof vertical pump motors have just been increased to 75 hp by U. S. Electrical Motors, Inc., Box 2058, Terminal Annex, Los Angeles 54, Calif. Available with either hollow shaft or solid shaft construction, these motors are designed for powering turbine pumps in sewage disposal plants and dangerous, dusty or dirty locations.

• **Floor enamel**—Defensite Tuf-Quik floor enamel contains a combination of rubber and vinyl formulated to be extremely resistant to chemical action. A quick drying enamel, it is manufactured by the Wilbur & Williams Co., 130 Lincoln St., Boston 35, (Brighton) Mass.

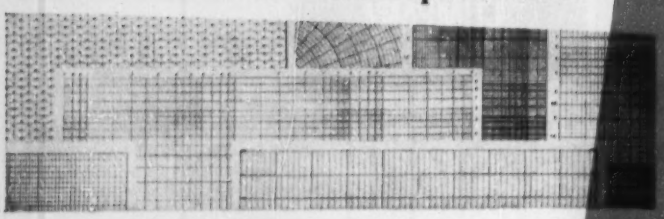
• **Fire extinguishers**—A new line of portable carbon dioxide fire extinguishers with a new and simplified, faster acting valve has been introduced by the American-LaFrance-Foamite Corp. of Elmira, N. Y. Five models are available: Model Nos. 2½, 5, 10, 15 and 20 (the model numbers denoting also the weight capacity of the respective units).

• **Welding gun**—A new light-weight spot-welding gun that uses ⅛-in. nonconsumable thoriated tungsten electrode and an inert-gas shield has been developed by the Air Reduction Sales Co., a Division of Air Reduction Co., Inc., 60 E. 42nd St., New York 17, N. Y. Called the Aircospot gun, the unit consists of a hand gun, control panel and necessary hose and cable assemblies. The gun is water-cooled and uses helium or argon, or a mixture of the two, for a shield. The gun is rated at 250 amp and welds may be made on sheet metal up to ⅛ in. thick.

SEEING is BELIEVING!



TECHNICHARTS make sharper, faster reproductions



Technichart graphs are printed on No. 1000H Clearprint, America's finest technical paper. To *prove* they're best, make this simple Clearprint test with a sample sheet...

1. INVITES PENCIL AND PEN—Try Technichart's perfect working surface with a 2H pencil, then with a ruling pen. Notice the sharp, clean lines. The accurately printed soft-brown, *dotted* rules are especially easy on the eyes, ideal for photographic prints and ready plotting.
2. NO GHOSTS—Erase and redraw several lines time and again. Fold the sheet repeatedly, too. Then hold it to the light, or make cleanest possible reproductions.
3. NEVER CHANGES—Clearprint sheets in use throughout the country for 19 years prove its stable, unchanging character. The choice for permanent records.

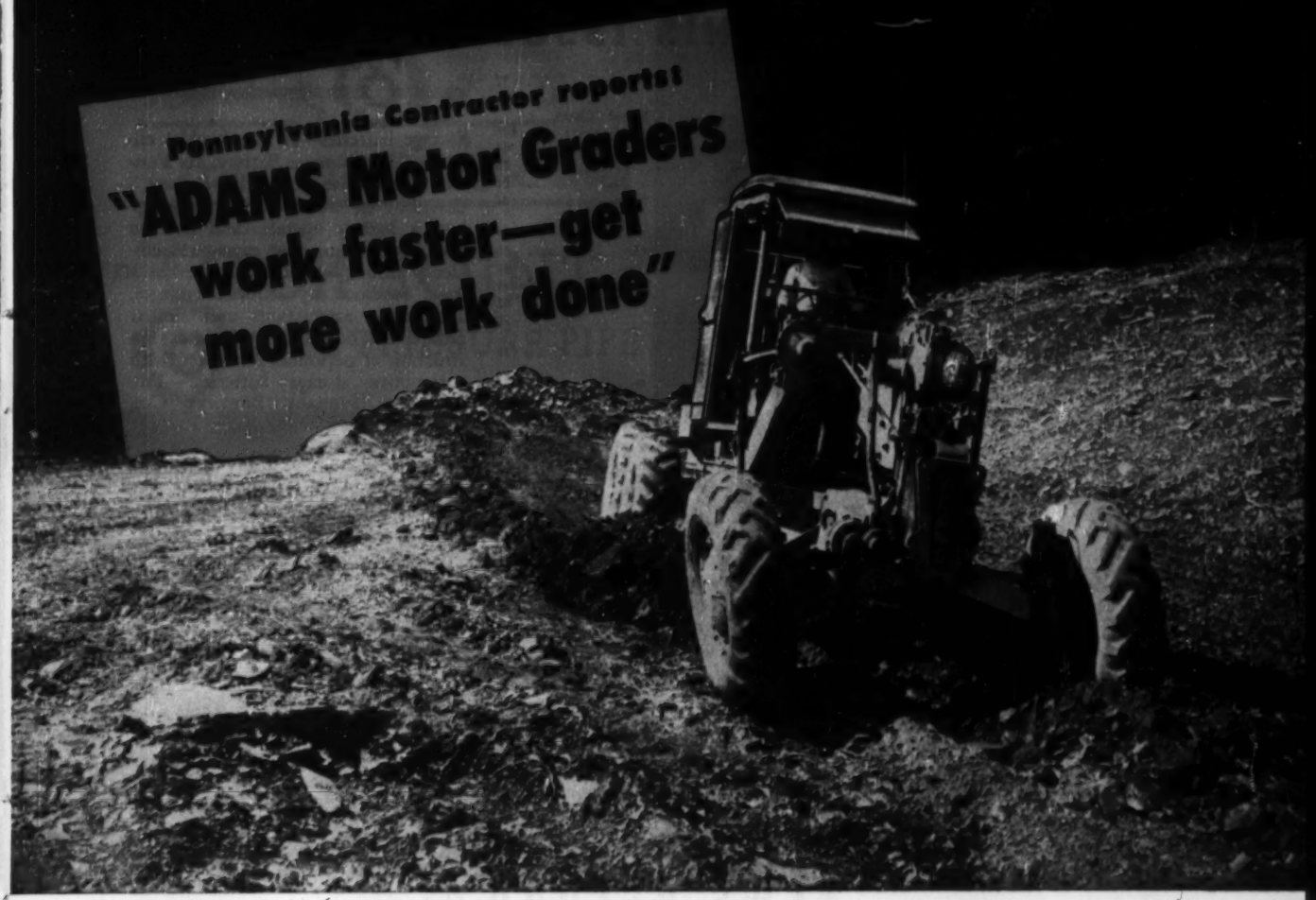
If you are not using Clearprint Technicharts now, please make this comparative test on the chart paper you are using.

Available in all standard rulings, including:
Cross Section Forms · Logarithmic Forms
Mathematical Forms · Time Period Forms
and other popular rulings—Standard sheets—8½" x 11" and 11" x 17"

Ask your dealer for details and samples, or write:

CLEARPRINT PAPER CO.
1482 SIXTY-SEVENTH STREET · EMERYVILLE, CALIFORNIA

CLEARPRINT
TECHNICHART
GRAPHIC CHARTS FOR PERFECT REPRODUCTION



● This Adams "550" Motor Grader (100 hp.), owned by A. E. Oblock Construction Co., is relocating 7 miles of road in the rugged mountains of Pennsylvania.

Mr. Oblock will tell you that he likes his Adams "550" for many reasons—its power, fuel economy and high-speed operating advantages in both forward and reverse gears. These high-speed advantages stem directly from the new Adams Constant-Mesh Transmission, the latest and finest ever put into a motor grader. It is, in fact, the only transmission providing 8 forward speeds, up to 26 mph., and 4 reverse speeds, up to 13 mph.

You will find that Adams Motor Graders have more time- and money-saving advantages than any others on the market—bar none . . . advantages that pay off in more work per day, with less effort and greater economy. (See listing at right.)

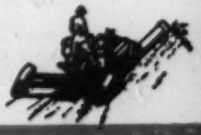
For convincing proof of Adams superiority, ask your local dealer to demonstrate one of these high-speed, high-performing machines—on one of your own jobs. Phone him today!

J. D. ADAMS MANUFACTURING CO. • INDIANAPOLIS, IND.

Only ADAMS Offers All These Features:

- **NEW CONSTANT-MESH TRANSMISSION**—quick, easy, positive gear shifts.
- **8 FORWARD SPEEDS**—up to 26 mph. for fast transport.
- **4 REVERSE SPEEDS**—up to 13 mph. Save time on shuttle work.
- **3 CREEPER SPEEDS**—low as ¼ mph. (Optional).
- **RUBBER-MOUNTED ENGINE**—floating power—no vibration transmitted to grader.
- **DUAL BRAKING SYSTEM**—quicker, easier, safer stops, with less effort.
- **FOOT ACCELERATOR**—for easier, safer overland travel.

ADAMS



Motor Graders TowLeaders Pull-Type Grader

ADVERTISERS IN THIS ISSUE

Acker Drill Co. 62
Adams Mfg. Co., J. D. 113
Aeroquip Corp. 65
Allis-Chalmers Mfg. Co. 1
Allison Engine Div., G. M. Corp. 39
American Air Filter Co., Inc. 109
American Cable Div., Amer. Chain & Cable Co. 4
Armco Drainage & Metal Products, Inc. 16
Armor Laboratories 47
Austin-Western Co. 51

Barber-Greene Co. 76
Barco Mfg. Co. 60
Baxter Co., J. H. 110
Bay City Shovels, Inc. 84
Berger & Sons, Inc., C. L. 2
Besser Mfg. Co. 11
Bethlehem Steel Co. 83
Borden & Riley Co. 79
Bucyrus-Erie Co. 3

Ceco Steel Products Corp. 42
Cement Gun Company 81
Chicago Bridge & Iron Co. .....2nd Cover
Chicago Pneumatic Tool Co. 40, 41
Chrysler Corp., Industrial Engine Div. .. 63
Clearprint Paper Co. 112
Clipper Mfg. Co. 5
Complete Machinery & Equip Co. 85
Concrete Reinforcing Steel Institute 78
Continental Motors Corp. 66

Deslauriers Column Mould Co. 110
Dicalite Div., Great Lakes Carbon Corp. 46

Eastman Kodak Co. 20
Euclid Road Machinery Div., General Motors Corp. 6

Foote Const. Equip. Div., Blaw-Knox Co. 37
Fuller & Co., Geo A. 111

Gateway Erectors, Inc. 82
Granco Steel Products Co. 91
Griffin Wellpoint Corp. 78
Gunite Concrete & Const. Co. 110

Hamilton Kent Mfg. Co. 15
Hendrix Mfg. Co. 92
Hyatt Bearings Div., G. M. C. 10

Ingersoll Rand Co. 108
International Correspondence School 14

Jones & Laughlin Steel Corp. 55
Joy Mfg. Co. 13

Kaiser Engineers 50
Keasbey & Mattison Co. 34
Kern Instrument Co. 79

Layne & Bowler, Inc. 57
Lee & Son, W. W. 86
Lefax Co. 85
LeTourneau-Westinghouse Co. 8, 9
Leupold & Stevens Instruments, Inc. 109
Link Belt Co. 18
Lock Joint Pipe Co. 115

Maguire Industries, Inc. 50
Mahon Co., R. C. 7
Marietta Concrete Corp. 45
Marion Power Shovel Co. 107
Mayo Tunnel & Mine Equip. Co. 82
McDonough Steel Co. 85
McGraw-Hill Book Co. 82
McKiernan-Terry Corp. 80

National Clay Pipe Mfgrs., Inc. 74

Ohio Locomotive Crane Co. 80

Pioneer Engineering Works 58, 59
Plasteel Products Co. 73

Raymond Concrete Pile Co. .....3rd Cover
Rockford Clutch Div., Borg-Warner 56
Roebling's Sons Corp., John A. 52

Sauerman Bros., Inc. 77
Schramm, Inc. 81
Solvay Process Div., Allied Chem. & Dye Corp. 106
Sprague & Henwood, Inc. 64
Staedtler Co., J. S. 76
Stang Corp., John W. 77
Subsurface-Seismograph Corp. 56

Taller & Cooper, Inc. 87
Taylor Forge & Pipe Works 60
Terry Steel Contractors, Inc. 80
Timken Roller Bearing Co. .....4th Cover
Trailer Village, Inc. 85
Truscon Steel Co. 70

U. S. Steel Corp. 12

Viber Co. 53
Vibroflotation Foundation Co. 76
Vulcan Iron Works 62

Wheeler Insulated Wire Co. 78
White Co., David 54
Wickwire Spencer Steel Div., Colorado Fuel & Iron Corp. .....Insert 33
Wisconsin Motors Corp. 64

Professional Services . . . 103, 104, 105

SEARCHLIGHT SECTION

(Classified Advertising)
H. E. Hilty, Mgr.

Employment 97, 98
Business Opportunities 98
Educational 98
Notices
Proposal 95, 96
Equipment
(For Rent, Sale, Wanted) 98-102

ENGINEERING NEWS-RECORD

330 West 42 St., New York 36—LOngacre 4-3000

D. S. Robertson, Advertising Sales Mgr.
Howard T. Olsen, *Business Manager*

ADVERTISING REPRESENTATIVES:

New York, 36—330 W. 42 St.,
M. J. Storz, E. A. Callahan, Jr.

Chicago, 11—520 No. Michigan Ave.,
F. G. Hudson, L. H. Hunt, W. G. Payne

San Francisco, 4—68 Post St.,
R. E. Dorlund

Philadelphia, 3—17th and Sansom Sts.,
A. B. Cozzens

Cleveland, 15—Hanna Bldg.,
E. E. Duff, Jr.

Detroit, 26—Penobscot Bldg.,
B. F. Horn

St. Louis, 8—Continental Bldg.,
W. E. Donnell

Los Angeles, 17—1111 Wilshire Blvd.,
H. L. Keeler

Atlanta, 3—Rhodes-Haverty Bldg.,
R. H. Sidur

Dallas, 1—First National Bank Bldg.,
J. H. Cash

OTHER SALES OFFICES:

Pittsburgh, 22—738-39 Oliver Bldg.
Boston, 16—350 Park Square Bldg.
London, McGraw-Hill House

PUBLICATIONS

Storage batteries—A new booklet entitled "The Storage Battery, Its Fundamentals, Use and Maintenance", describes in non-technical language how a battery operates and how to keep it performing at maximum efficiency throughout its life. Used as a basic textbook by schools, colleges, automobile associations and similar groups, the booklet is suitable for instruction of personnel associated with automotive storage batteries.—THE ELECTRIC STORAGE BATTERY CO., Box 8109, PHILADELPHIA 1, PA.

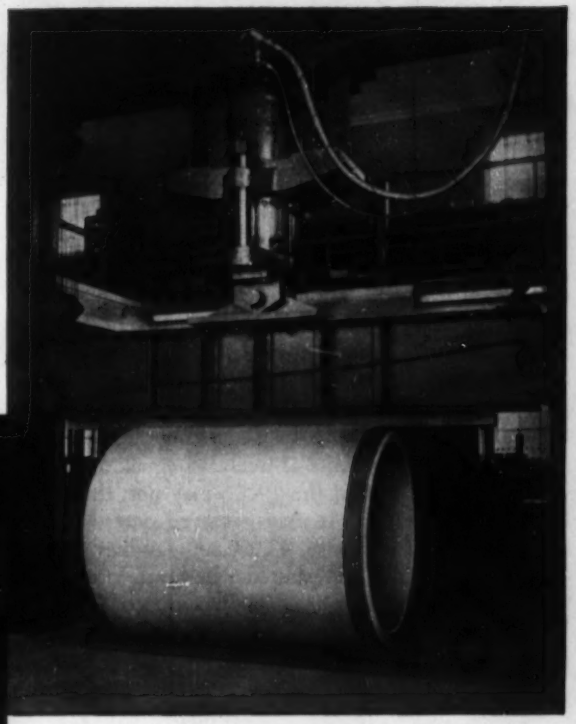
Water softening—A new 24-page bulletin describes the use of solids contact reactors for clarifying and/or lime softening of water. The catalog defines the major advantages of the solids contact principle, gives the eight basic requirements for sound reactor design and shows how these features are incorporated by the company. It illustrates the basic reactor types that can be supplied: round or square units with vertical shaft agitator, and regular units with horizontal shaft agitator. Chemical feed and auxiliary equipment are also described. Publication No. 5001-A.—COCHRANE CORP., 17TH ST. BELOW ALLGHENY AVE., PHILADELPHIA 32, PA.

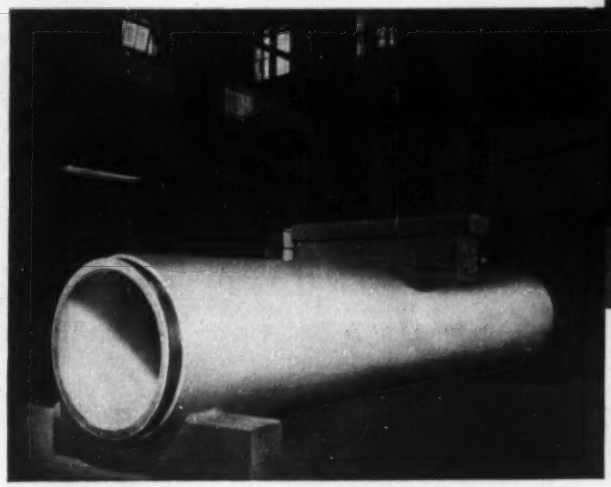
Roof deck—A new architectural design manual for the use of Tectum roof deck explains the methods of anchoring the material, specifications for its use, design data, and other architectural details. Called "Engineered Roof Deck", the booklet is written for the architect and contains loading tables and technical drawings to assist him in specifying the new product for roof decks. To help tell the story of its product to the architect who is not familiar with it, the company has released a companion catalog called "Tectum, The New Basic Building Material". It reports that the material is structural, insulating, acoustical, incombustible, light in weight and dimensionally stable.—TECTUM CORP., 105 S. SIXTH ST., NEWARK, OHIO.

Fill construction—City officials, contractors and engineers might be interested in "How to Construct a Sanitary Landfill". Information on the initial planning, compacting, loading, spreading and finishing of the landfill are subjects covered in this bulletin. The booklet also points out the advantages of the Drott ramp method of construction.—DROTT MFG. CORP., MILWAUKEE 8, WIS.

test after test assures the best

IN LOCK JOINT CONCRETE PRESSURE PIPE





▲ *Three edge bearing test in 300,000 pound capacity testing machine.*

◀ *Determining a pipe's beam strength in 300,000 pound capacity testing machine.*

Do you have conclusive proof of the fundamental characteristics of the pipe you intend using in your next water works project? Are you certain of its advantages? Do you recognize its limitations?

• • •

In Lock Joint's laboratory at Wharton, N. J. all guess work has been eliminated. Here, Lock Joint Pipes of all types and designs are tested to determine the exact extent of their ability to withstand back loads, beam loads and internal pressures. The most efficient modern equipment in the hands of highly trained personnel is used to give a tangible, practical demonstration of the high quality built into every type of Lock Joint Pipe.

• • •

These constant tests of our products are your assurance that, in its field, no finer pressure pipe than Lock Joint can be produced. Built in diameters from 16″ upward and designed for any pressure common to water works practice, these pipes will serve you unfailingly for generations.

SCOPE OF SERVICES—*Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply and Distribution Mains 16″ in diameter or larger, as well as Concrete Pipes of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous Lines.*

LOCK JOINT PIPE COMPANY

Established 1905

P. O. Box 269, East Orange, N. J.

PRESSURE PIPE PLANTS: Wharton, N. J., Turner, Kan., Detroit, Mich., Columbia, S. C.

SEWER & CULVERT PIPE PLANTS:

Casper, Wyo. • Cheyenne, Wyo. • Denver, Col. • Kansas City, Mo. Valley Park, Mo. • Chicago, Ill. • Rock Island, Ill. • Wichita, Kan. Kenilworth, N. J. • Hartford, Conn. • Tucumcari, N. Mex. • Oklahoma City, Okla. • Tulsa, Okla. • Beloit, Wis. • Hato Rey, P. R. • Caracas, Venezuela

EDITORIALS

What's par for housing?

IN THE YEAR JUST CLOSED new housing units added to the nation's living quarters again topped 1,000,000, thus maintaining a 1,000,000 annual average over the eight years since the war. This means that in that period one out of every 40 families in the country has been supplied with new housing each year. By coincidence this is the same ratio that existed in the eight years from 1922-29. In between these two periods of prosperity, however, the ratio of new housing units to existing families dropped to 1:150, putting us far behind in necessary replacements. Merely to equal the housing construction rate of the 1920's may not, therefore, be much of a record. It may not even deserve to be called a boom. For with 43,000,000 families in the country today, par for housing may be nearer the 1,000,000 units annually than is generally supposed.

New look at an old technique

EVEN THOUGH forms and their supports account for a large percentage of the price of concrete work in place, precasting as a means of eliminating these costly items has never enjoyed wide success. Except in the case of mass production of masonry block, roof deck and wall panels, something has been missing. Now, as a part of the growing experimentation with prestressed concrete, signs are beginning to appear that this new technique may give precasting its long-sought boost.

Precasting, of course, has several claimed advantages over in-place casting—stronger concrete because of better control; fewer forms, which are re-used many times; little or no falsework on the site; more efficient working conditions for labor; more independence of weather; and application of mass-production techniques. But precasting also has some disadvantages—handling, transporting and erecting precast members frequently are so expensive as to more than offset any savings.

The trouble is that not only are precast concrete units heavy but they must be handled with care because of the danger of cracking. If the members are prestressed, however, their weight can be cut. Furthermore, because the steel keeps them in compression, they are much less likely to crack. So handling, transporting and erection expenses may be dropped to the point where precast concrete may cost less than other types of construction. This was demonstrated several times during the past year when bids were taken on alternate designs.

One noteworthy instance was the Senior High School gymnasium, Greensboro, N. C., the roof girders for which have the longest span (120 ft) in prestressed concrete used to date in building construction in the U. S. Both the engineer's cost estimates and the contractors' bids showed that the prestressed, precast concrete girders would be the least expensive of the alternate designs which were considered.

Since prestressed concrete is still new and not yet in widespread use, the instances where it has been competitive are not sufficiently numerous to demonstrate conclusively that it is the long-sought solution of the problem of precast concrete. Still, its limited success warrants a new look at this old technique.

Missouri compact should be drafted

THE FEAR EXPRESSED at a recent meeting of governors from the Missouri River basin states that the proposed Missouri Basin Commission would be nothing but a debating society may be well founded, but that fear should not be allowed to kill the idea. What was proposed last February by the Missouri River States Committee, which had been set up to study joint action, was a five-man commission appointed by the President. Its chief function was to draft an overall plan for the basin, and then coordinate the activities of existing federal agencies, such as the Army Engineers and Bureau of Reclamation, in execution of the plan. That was considered better than an independent agency like the Tennessee Valley Authority.

Despite doubts raised at the governors' meeting, the Missouri River States Committee is planning to go ahead with the draft of a compact embodying the original proposal. That appears sound because it will give the legislatures of the basin states something specific to consider. Until that can be done, the committee will not know definitely what type of agency will be acceptable to the majority.

Boost needed for airports

THE DECISION of the Defense Department to give relatively more build-up attention—and funds—to the Air Force than to the Army and Navy boosts the prospects for military airfield construction both at home and abroad. In the meantime, however, civil airports are in dire need of a similar shot in the arm from the federal government.

The small amounts of aid granted since the war have been useful and often controlling in the decisions of cities to undertake needed airport improvements. But a little more in amount and a great deal more in certainty and continuity of grants would, it would seem, pay big dividends. In any event, unless something is done soon to inject new purpose and resolve into the provision of airport improvements, the air transport problem is in danger of becoming as snarled as that of the highways. Accordingly it is to be hoped that the coming report of the Department of Commerce on this question will be sympathetic to the need for a boost to airport improvements.

...the finest structures rest on RAYMOND FOUNDATIONS

FACTORY OF FLORSHEIM SHOE CORPORATION
Chicago, Ill.

ARCHITECTS & ENGINEERS:
Shaw, Metz & Dolio, Chicago

CONTRACTOR FOR SUPERSTRUCTURE:
Campbell-Lowrie-Lautermilch Corp., Chicago

RAYMOND'S DOMESTIC SERVICES . . .
Soil Investigations • Foundation Construction • Harbor and Waterfront Improvements Prestressed Concrete Construction • Cement-mortar Lining of Water, Oil and Gas Pipelines, In Place.

RAYMOND'S SERVICES ABROAD . . .
In addition to the above, all types of General Construction.

RAYMOND
CONCRETE PILE CO.
140 Cedar Street • New York 6, N. Y.

Branch Offices in Principal Cities of the United States, Central and South America

Carries 18.0 cubic yards of earth cross-country at 35 mph with wheels on TIMKEN® bearings

THIS Wooldridge Manufacturing Company's Terra Cobra really has to take it to keep moving over rough ground with an 18.0 cubic yard load at speeds up to 35 mph. And Timken® tapered roller bearings in drive and scraper wheels help this Terra Cobra take rough ground in stride without breakdowns.

The tapered construction of Timken bearings enables them to take any combination of radial and thrust loads resulting from big loads and rough, uneven ground.

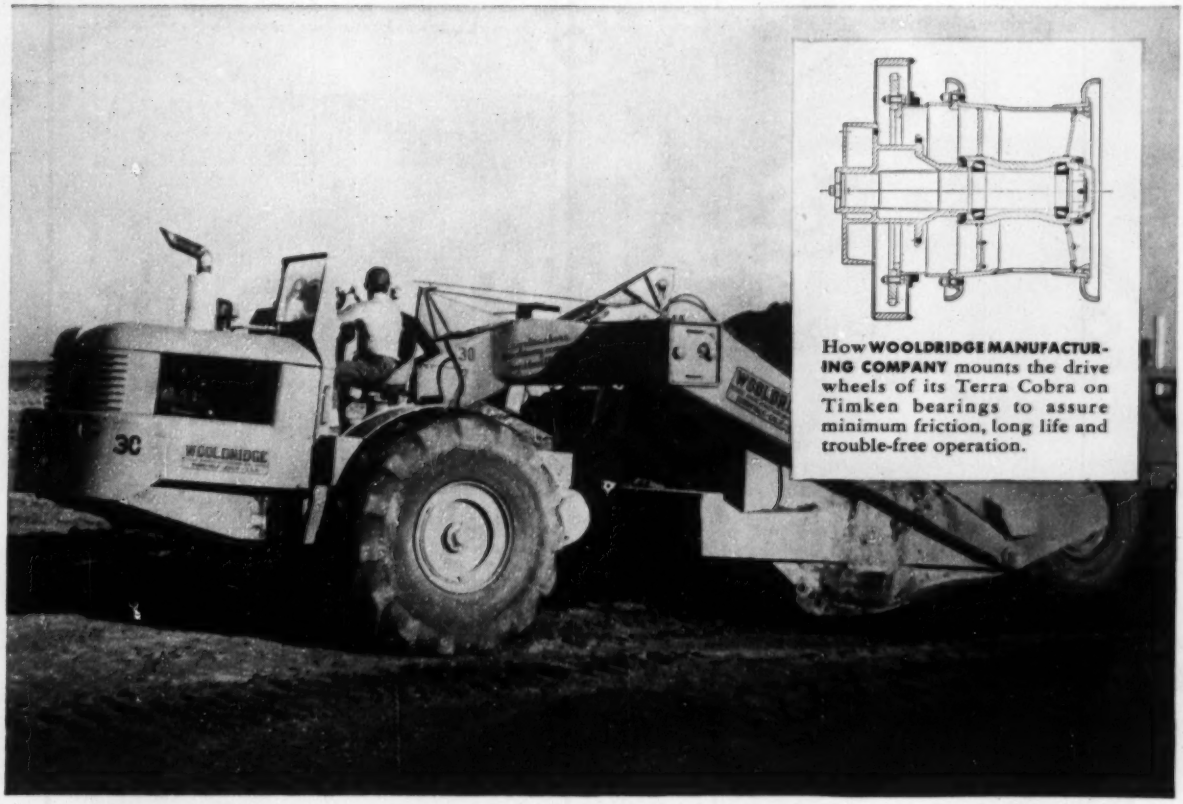
And Timken bearings provide extra load-carrying capacity because of line contact between their rollers and races.

Made of Timken fine alloy steel, the bearings are case hardened to give them a hard, wear-resistant surface over a tough, shock-resistant core.

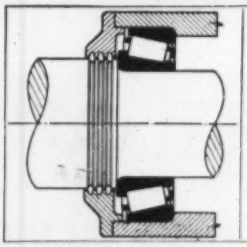
Bearing closures are more effective because Timken bearings hold housings and shafts concentric. Dust and mud can't get in—lubricant can't get out. As a result, maintenance is minimized, cost reduced.

Timken bearings can give *you* these same advantages. Always specify them in the equipment you build or buy. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.



How **WOOLDRIDGE MANUFACTURING COMPANY** mounts the drive wheels of its Terra Cobra on Timken bearings to assure minimum friction, long life and trouble-free operation.



LUBRICANT STAYS IN —DIRT KEPT OUT

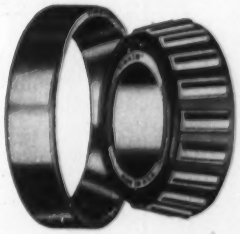
Because Timken bearings hold shafts concentric with housings, closures are made more effective. Lubricant is retained, dirt and moisture kept out.

The Timken Roller Bearing Company is the acknowledged leader in: 1. advanced design; 2. precision manufacture; 3. rigid quality control; 4. special analysis Timken steels.

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS



NOT JUST A BALL ○ NOT JUST A ROLLER ⊂ THE TIMKEN TAPERED ROLLER ⊃ BEARING TAKES RADIAL ↕ AND THRUST ↔ LOADS OR ANY COMBINATION